CIVIL PLANS

- C0.00 – GENERAL NOTES

- C1.00 – STORMWATER POLLUTION PREVENTION PLAN
- C1.01 – STORMWATER POLLUTION PREVENTION PLAN
- C1.D1 – STORMWATER POLLUTION PREVENTION DETAILS

- C2.00 – GRADING PLAN
- C2.01 – GRADING PLAN
- C2.02 – GRADING PLAN

- C3.00 – UTILITY PLAN
- C3.01 – UTILITY PLAN

- C4.00 – OVERALL SANITARY SEWER PLAN
- C4.01 – OVERALL SANITARY SEWER PLAN
- C4.02 – SANITARY SEWER PLAN & PROFILE – LINE 'A'
- C4.03 – SANITARY SEWER PLAN & PROFILE – LINE 'A'
- C4.04 – SANITARY SEWER PLAN & PROFILE – LINE 'A'
- C4.05 – SANITARY SEWER PLAN & PROFILE – LINE 'A'
- C4.06 – SANITARY SEWER PLAN & PROFILE – LINE 'A'
- C4.07 – SANITARY SEWER PLAN & PROFILE – LINE 'B'
- C4.08 – SANITARY SEWER PLAN & PROFILE – LINE 'C'
- C4.09 – SANITARY SEWER PLAN & PROFILE – LINE 'D'
- C4.D1 – SANITARY SEWER GENERAL NOTES
- C4.D2 – SANITARY SEWER STANDARD DETAILS
-
- C5.00 – WATER DISTRIBUTION PLAN
- C5.01 – WATER DISTRIBUTION PLAN
- C5.D1 – WATER DISTRIBUTION STANDARD DETAILS
- C5.D2 – WATER DISTRIBUTION STANDARD DETAILS
- C5.D3 – WATER DISTRIBUTION STANDARD DETAILS
- C5.D4 – WATER DISTRIBUTION STANDARD DETAILS

- C6.00 – MASTER DRAINAGE MAP
- C6.01 – MASTER DRAINAGE MAP
- C6.02 – DRAINAGE PLAN & PROFILE DRAIN A
- C6.03 – DRAINAGE PLAN & PROFILE DRAIN A
- C6.04 – DRAINAGE PLAN & PROFILE DRAIN A
- C6.05 – DRAINAGE PLAN & PROFILE DRAIN A
- C6.05A – DRAINAGE PLAN & PROFILE DRAIN A
- C6.06 – DRAINAGE PLAN & PROFILE DRAIN C
- C6.07 – DRAINAGE PLAN & PROFILE DRAIN D
- C6.08 – DETENTION POND PLAN
- C6.08A – DETENTION POND PLAN
- C6.D1 – MISCELLANEOUS DRAINAGE DETAILS
- C6.D2 – MISCELLANEOUS DRAINAGE DETAILS
- C6.D3 – MISCELLANEOUS DRAINAGE DETAILS
- C6.D4 – MISCELLANEOUS DRAINAGE DETAILS
- C6.D5 – MISCELLANEOUS DRAINAGE DETAILS
- C6.D6 – MISCELLANEOUS DRAINAGE DETAILS

- C7.00 – STREET PLAN & PROFILE – PARKHOUSE BLVD
- C7.01 – STREET PLAN & PROFILE – CEDAR HILL ST
- C7.02 – STREET PLAN & PROFILE – BARTLETT DR
- C7.03 – STREET PLAN & PROFILE – BLANCO AVE
- C7.04 – STREET PLAN & PROFILE – PETRIFIED ST
- C7.05 – STREET PLAN & PROFILE – GLACIER AVE
- C7.06 – STREET PLAN & PROFILE – ZION LN & LBJ LN
- C7.D1 – STANDARD STREET DETAIL
- C7.D2 – TYPICAL CONCRETE DRIVEWAY DETAILS
- C7.D3 – TYPICAL CONCRETE DRIVEWAY DETAILS
- C7.D4 – TYPICAL STREET SIGN DETAILS
- C7.D5 – TYPICAL KNUCKLE DETAIL
- C7.D6 – TXDOT PEDESTRIAN FACILITIES DETAILS CURB RAMPS

- C8.00 – TRAFFIC SIGNAGE PLAN
- C8.01 – PARKHOUSE BLVD SIGHT DISTANCE PLAN
- C8.02 – PARKHOUSE BLVD SIGHT DISTANCE PLAN
- C8.03 – PARKHOUSE BLVD SIGHT DISTANCE PLAN
- C8.04 – PARKHOUSE BLVD SIGHT DISTANCE PLAN
- C8.G1 – TxDOT GENERAL NOTES
- C8.G2 – TxDOT GENERAL NOTES
- C8.G3 – TxDOT GENERAL NOTES
- C8.G4 – TxDOT GENERAL NOTES
- C8.G5 – TxDOT GENERAL NOTES
- C8.G6 – TxDOT GENERAL NOTES
- C8.G7 – TxDOT GENERAL NOTES
- C8.G8 – TXDOT GENERAL NOTES
- C8.G9 – TXDOT GENERAL NOTES
- C8.G10 – TXDOT GENERAL NOTES
- C8.EX1 – FM 725 EXISTING CONDITIONS & DEMOLITION PLAN
- C8.EX2 – FM 725 EXISTING CONDITIONS & DEMOLITION PLAN
- C8.EX3 – FM 725 EXISTING CONDITIONS & DEMOLITION PLAN
- C8.EC1 – FM 725 STORMWATER POLLUTION PREVENTION PLAN
- C8.EC2 – FM 725 STORMWATER POLLUTION PREVENTION PLAN
- C8.EC3 – FM 725 STORMWATER POLLUTION PREVENTION PLAN
- C8.EC4 – TXDOT EROSION CONTROL DETAILS
- C8.EC5 – TXDOT EROSION CONTROL DETAILS
- C8.EC6 – TXDOT EROSION CONTROL DETAILS
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- C8.DR1 – FM 725 GRADING PLAN
- C8.DR2 – FM 725 GRADING PLAN
- C8.DR3 – FM 725 GRADING PLAN
- C8.DR4 – FM 725 CULVERTS PLAN & PROFILES
- C8.DR5 – FM 725 CULVERTS PLAN & PROFILES
- C8.DR6 – TXDOT HEADWALL DETAIL
- C8.S1 – EMERGENCY ACCESS PLAN & PROFILE
- C8.S2 – FM 725 IMPROVEMENTS PLAN
- C8.S3 – FM 725 IMPROVEMENTS PLAN
- C8.S4 – FM 725 IMPROVEMENTS PLAN
- C8.S5 – FM 725 STRIPING PLAN
- C8.S6 – FM 725 STRIPING PLAN
- C8.S7 – FM 725 STRIPING PLAN
- C8.S8 – TXDOT TYPICAL SECTIONS
- C8.S9 – TXDOT TYPICAL SECTIONS - CROSS SECTIONS
- C8.S10 – TXDOT TYPICAL SECTIONS - CROSS SECTIONS
- C8.D1 – TXDOT DELINEATION DETAILS
- C8.D2 – TXDOT DELINEATION DETAILS
- C8.D3 – TXDOT PAVEMENT MARKING DETAILS
- C8.D4 – TXDOT PAVEMENT MARKING DETAILS
- C8.D5 – TXDOT PAVEMENT MARKING DETAILS
- C8.D6 – TXDOT PAVEMENT MARKING DETAILS
- C8.D7 – TXDOT PAVEMENT MARKING DETAILS
- C8.D7A – TXDOT PAVEMENT MARKING DETAILS
- C8.D8 – TXDOT PAVEMENT MARKING DETAILS
- C8.D9 – TXDOT SIGN MOUNTING DETAILS
- C8.D10 – TXDOT SIGN MOUNTING DETAILS
- C8.D11 – TXDOT SIGN MOUNTING DETAILS
- C8.D12 – TXDOT SIGN MOUNTING DETAILS
- C8.D13 – TXDOT SIGN MOUNTING DETAILS
- C8.D14 – TXDOT SIGN MOUNTING DETAILS
- C8.D15 – TXDOT RUMBLE STRIP DETAILS

CONSTRUCTION DOCUMENTS FOR

PARKHOUSE UNIT 1

SPRINGS HILL SPECIAL UTILITY DISTRICT _____ Date _____

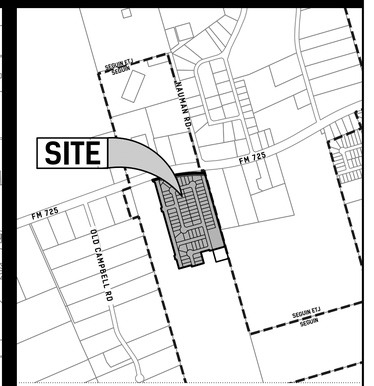
Note: The Springs Hill Special Utility District (SHSUD) signature above indicates that SHSUD has reviewed this document for general conformance with SHSUD requirements. SHSUD assumes no responsibility for the completeness and/or accuracy of these documents. Responsibility for the engineering adequacy of the facilities depicted in this document lies solely with the Texas Licensed Professional Engineer whose seal and signature is affixed to this document.

VICINITY MAP
N.T.S.

EST. 1980
CUDE ENGINEERS

SAN ANTONIO | AUSTIN | SAN MARCOS

1290 WONDER WORLD DRIVE, SUITE 1240
SAN MARCOS, TEXAS 78666
P:(512) 260.9100
TBPE FIRM NO. 455
TBPLS FIRM NO. 10048500
SBE CERTIFIED FIRM



LOCATION MAP
SCALE: 1" = 1000'

KINGFISH
REAL ESTATE | DEVELOPMENT | CONSULTING

DEVELOPER:
REPUBLIC LAND AND DEVELOPMENT COMPANY, LP
C/O KING FISH DEVELOPMENT, LLC
CONTACT PERSON: OSCAR DOMINGUEZ
2722 WEST BITTERS ROAD, SUITE 106
SAN ANTONIO, TEXAS 78248
TEL: (210) 882-6800

N W E S

SITE ADDRESS:
FM 725, SEGUIN,
TEXAS 78155

PLAN SET DATE:
AUGUST 2025

PROJECT NUMBER:
04154.001

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

THIS PLAN SET HAS BEEN PREPARED, DESIGNED AND REVIEWED UNDER MY DIRECT SUPERVISION.

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GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF SEGUIN STANDARDS.

2. SITE

a. EXISTING CONDITIONS

i. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION ANY DAMAGE DONE TO EXISTING FENCES, CONCRETE ISLANDS, STREET PAVING, CURBS, SHRUBS, BUSHES OR DRIVEWAYS.

ii. CONTRACTOR IS TO NOT DISPOSE OF ANY CONSTRUCTION MATERIALS WITHIN DEDICATED PARKLAND AT ANY TIME WHILE THE RESIDENTIAL SUBDIVISION IS BEING BUILT UNLESS APPROVED IN WRITING BY THE DIRECTOR OF PARKS AND RECREATION OR DESIGNEE.

b. TREES

i. NO UTILITY OR STREET EXCAVATION WORK SHALL BEGIN IN AREAS WHERE TREE PRESERVATION AND TREATMENT MEASURES HAVE NOT BEEN COMPLETED AND APPROVED.

ii. THE CONTRACTOR SHALL COMPLY WITH THE CITY OF SEGUIN OR OTHER GOVERNING MUNICIPALITY'S TREE ORDINANCES WHEN EXCAVATING NEAR TREES.

iii. TREE PROTECTION FENCING SHALL BE REQUIRED. TREE PROTECTION FENCING SHALL BE INSTALLED, MAINTAINED AND REPAIRED BY THE CONTRACTOR DURING SITE CONSTRUCTION. DURING CONSTRUCTION ACTIVITY, AT LEAST A SIX-INCH LAYER OF COARSE MULCH SHALL BE PLACED AND MAINTAINED OVER THE ROOT PROTECTION ZONE (NO SEPARATE PAY ITEM).

iv. CONTRACTOR SHALL REFERENCE TREE PLAN AND PRIVATE GRADING PLAN FOR CLEARING AND GRADING LIMITS.

v. ANY TREE REMOVAL SHALL BE APPROVED BY THE CITY INSPECTOR.

c. ACCESS

i. ACCESS TO THE SITE IS PROVIDED THROUGH FM 725 THE EXISTING ROAD.

d. BENCHMARK

i. BENCHMARK TO BE SET BY THE ENGINEER PRIOR TO CONSTRUCTION. CONTRACTOR SHALL REQUEST ENGINEER TO SET BENCHMARK PRIOR TO A PRE-CONSTRUCTION MEETING

ii. CONTRACTOR SHALL VERIFY BENCHMARKS AND DATUMS PRIOR TO COMMENCING CONSTRUCTION OR STAKING OF IMPROVEMENTS.

3. DRIVEWAYS

a. RESIDENTIAL DRIVEWAYS ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY TO DENOTE A POTENTIAL CONFLICT WITH DRAINAGE FACILITY AND/OR ADA RAMP. ALL DRIVEWAYS SERVING A RESIDENTIAL LOT SHALL BE BUILT AT THE TIME OF HOMEBUILDING.

b. ALL DRIVEWAYS SERVING OPEN SPACES WHERE THE PUBLIC IS PRESENT SHALL BE BUILT WITH THE SUBDIVISION INFRASTRUCTURE.

c. DRIVEWAY CONSTRUCTION SHALL FOLLOW LOCAL DESIGN SPECIFICATIONS AND DETAILS.

4. ADA RAMPS / SIDEWALKS

a. THE LOCATION OF ACCESSIBLE CURB RAMPS ARE SHOWN ON THE PLANS. ALL RAMPS SHALL CONFIRM TO ADA/TAS REQUIREMENTS IN ACCORDANCE WITH TXDOT PED-18 DETAILS.

b. ALL ACCESSIBLE CURB RAMPS SHALL BE CONSTRUCTED WITH THE SUBDIVISION IMPROVEMENTS. ALL ADA RAMPS WITH RESIDENTIAL LOT FRONTAGE CAN BE BUILT DURING HOMEBUILDING. ADA RAMPS WITHOUT RESIDENTIAL LOT FRONTAGE MUST BE CONSTRUCTED WITH INFRASTRUCTURE.

c. THE ADA RAMP STANDARD DETAILS ARE INTENDED TO SHOW TYPICAL LAYOUTS FOR THE CONSTRUCTION OF THE CURB RAMPS. THE INFORMATION SHOWN ON THE STANDARD DETAILS MEET THE REQUIREMENTS SHOWN IN THE "2012 TEXAS ACCESSIBILITY STANDARDS" (TAS) AND THE "2010 ADA STANDARDS FOR ACCESSIBLE DESIGN" BY THE DEPARTMENT OF JUSTICE.

d. SIDEWALKS MUST BE CONSTRUCTED WITH THE STREET INFRASTRUCTURE UNLESS FRONTING RESIDENTIAL LOTS. IF SIDEWALK IS FROTNING A RESIDENTIAL LOT, SIDEWALK IS TO BE CONSTRUCTED AT THE TIME OF HOME BUILDING.

e. ALL SIDEWALK CONSTRUCTION MUST BE FREE OF OBSTRUCTION.

f. CONTRACTOR TO VERIFY STREET LIGHT LOCATION PRIOR TO SIDEWALK CONSTRUCTION.

5. STREET

a. FOR ALL REFERENCES TO THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT), THE CONTRACTOR SHALL SEE THEIR CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS AND BRIDGES, WHICH I ALSO LOCATED AT WW.TXDOT.GOV.

b. THE FRAME & COVER FOR WASTEWATER MANHOLES WILL BE TEMPORARILY REMOVED DURING CONSTRUCTION OF THE ROAD SECTION. THE STRUCTURE WILL BE COVERED AS TO NOT ALLOW CONSTRUCTION DEBRIS & MATERIAL INTO THE SEWER SYSTEM, THE ROAD BASE LAID, COMPACTED PER PROJECT SPECIFICATIONS, AND FINAL PAVING INSTALLED.

c. THE WASTEWATER MANHOLE FRAME AND COVER WILL BE THEN SET TO FINAL GRADE AND PROPERLY SECURED AS PART OF THE CONCRETE ENCASEMENT. THE CONTRACTOR IS REQUIRED TO ADJUST ALL MANHOLES AND WATER VALVES TO MATCH THE GRADE OF THE STREET SECTION OR THE ELEVATION SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

6. DRAINAGE

a. CONTRACTOR IS RESPONSIBLE FOR ENSURING POSITIVE SITE DRAINAGE AT ALL TIMES DURING AND UPON COMPLETION OF INFRASTRUCTURE.

b. CONCRETE COLLARS SHALL BE INSTALLED FOR CAST-IN-PLACE & PRECAST CURB INLETS FOR EVERY PIPE CONNECTION.

c. FLOODPLAIN

i. THE CONTRACTOR SHALL NOT PLACE ANY FILL MATERIAL OR INFRASTRUCTURE IMPROVEMENTS WITHIN THE FLOOD PLAIN WITHOUT APPROVAL FROM THE CITY OF SEGUIN FLOODPLAIN ADMINISTRATOR, AND/OR THE CITY ENGINEER.

ii. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIALS IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN PERMIT.

iii. CONTRACTOR SHALL BE RESPONSIBLE FOR STAKING THE FLOODPLAIN LIMITS PRIOR TO CONSTRUCTION IF WORKING WITHIN GUADALUPE COUNTY.

d. VEGETATION

i. CONTRACTOR SHALL REVEGETATE ALL DISTURBED AREAS WITHIN EASEMENT LIMITS UPON COMPLETION OF CONSTRUCTION WITHIN ROW LIMITS.

ii. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION. REVEGETATION PAY ITEM INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.

e. CONSTRUCTION SEQUENCING NOTE;

i. THE DETENTION POND SHALL BE FORMED AND OUTFALL STRUCTURE INSTALLED PRIOR TO ANY IMPERVIOUS COVER BEING PLACED ON THE GROUND.

ii. INSTALLATION OF TEMPORARY CONSTRUCTION ENTRANCE/EXIT

iii. INSTALLATION OF EROSION AND SEDIMENTATION CONTROLS

iv. SITE CLEARING

v. GRADING

vi. SANITARY SEWER INSTALLATION

vii. WATER MAIN INSTALLATION

viii. DRY UTILITY INSTALLATION

ix. STREET AND DRAINAGE INFRASTRUCTURE INSTALLATION

x. REMOVAL OF TEMPORARY EROSION AND SEDIMENTATION CONTROLS

xi. SITE CLEAN UP

xii. SINGLE-FAMILY RESIDENTIAL HOME CONSTRUCTION

f. ALL STORM DRAINAGE PIPE WITHIN THE CITY R.O.W. SHALL BE REINFORCED CONCRETE PIPE RCP), CLASS III MINIMUM. 18-INCH MINIMUM UNLESS APPROVED OTHERWISE BY THE CITY ENGINEER.

g. ALL CURB INLETS, JUNCTION BOXES, OR OTHER STORM STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH TXOT ITEM 465, CURRENT EDITION.

h. CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO PRIVATE PROPERTY, INCLUDING, BUT NOT LIMITED TO FENCES, WALLS, PAVEMENT, GRASS, TREES, AND LAWN SPRINKLER AND IRRIGATION SYSTEM AT THEIR OWN COST. ANY ADDITIONAL DAMAGES TO PRIVATE PROPERTY DUE TO LACK OF MAINTENANCE OF SWPPP BMPS, WILL BE CORRECTED BY THE CONTRACTOR AT THEIR SOLE EXPENSE.

7. UTILITY

a. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PUBLIC OR PRIVATE, PRIOR TO EXCAVATION. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA. THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION OR DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION AND FOR THE SAFETY AND PROTECTION THEREOF AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK.

b. CONTRACTOR IS TO NOTIFY ENGINEER OF ANY DISCREPANCIES OR UTILITY CONFLICTS.

c. CONTRACTOR IS REQUIRED TO NOTIFY GVEC WHEN ENCROACHING UPON ANY OF THEIR EXISTING ELECTRIC EASEMENTS IF THIS ENCROACHMENT IS NOT NOTED ON THE CONSTRUCTION SET.

d. CONTRACTOR SHALL DETERMINE THE DEPTH AND LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATING, TRENCHING, OR DRILLING AND SHALL BE REQUIRED TO TAKE ANY PRECAUTIONARY MEASURES TO PROTECT ALL LINES SHOWN AND/OR ANY OTHER UNDERGROUND UTILITIES NOT OF RECORD OR NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL PUBLIC AGENCIES AND FRANCHISE UTILITIES 48 HOURS PRIOR TO CONSTRUCTION (TEXAS811 1-800-344-8377). THE CONTRACTOR MAY BE REQUIRED TO EXPOSE THESE FACILITIES AT THEIR OWN COST.

e. CONTRACTOR MUST CONTACT THE UTILITY PROVIDER IMMEDIATELY IF ANY DAMAGE TO EXISTING UTILITIES OCCURS. ANY DAMAGE TO UTILITIES RESULTING FROM CONTRACTOR'S OPERATIONS SHALL BE RESTORED AT THEIR EXPENSE.

f. CONTRACTOR SHALL PROVIDE THE ACCESS TO ALL PROPERTIES, EASEMENTS, UTILITIES, AND FACILITIES AT ALL TIMES DURING CONSTRUCTION.

g. DISCREPANCIES ON THE INFRASTRUCTURE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE DESIGN ENGINEER AND APPLICABLE JURISDICTIONAL ENTITY BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS FROM THE INFRASTRUCTURE DRAWINGS ARE PERMITTED WITHOUT WRITTEN APPROVAL OF THE ENGINEER AND SAID ENTITIES.

h. AREAS WHERE UTILITIES NEAR THE CONSTRUCTION AREA WOULD BE DAMAGED BY SOIL MOVEMENT, SLIPS OR CAVE-INS, THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS TO PROTECT SUCH UTILITIES FROM DAMAGE, AND THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR AND SHALL PAY FOR THE REPAIR OF ANY SUCH DAMAGE WITHOUT ADDITIONAL COST TO THE OWNER.

8. CONDUITS

a. PRIOR TO THE INSTALLATION OF STREET BASE MATERIAL, CONTRACTOR SHALL COORDINATE WITH ENGINEER AND UTILITY PROVIDERS TO INSTALL NECESSARY CONDUITS, INCLUDING IRRIGATION CONDUITS, FOR UTILITY INSTALLATION.

9. MATERIALS/SPECS

a. CONSTRUCTION WILL CONFORM TO THE FOLLOWING CURRENT SPECIFICATIONS AS APPLICABLE.

i. CITY OF SEGUIN DESIGN STANDARDS, LATEST EDITION

ii. SPRINGS HILL SPECIAL UTILITY DISTRICT STANDARD DRAWINGS & SPECIFICATIONS LATEST EDITION

iii. TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES, LATEST EDITION

iv. TEXAS COMMISSION ON ENVIRONMENTAL QUALITY "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS." TEXAS COMMISSION ON ENVIRONMENTAL QUALITY "DESIGN CRITERIA FOR SEWERAGE SYSTEMS" CHAPTER 217.

v. REFER TO 30 TAC CHAPTER 290 FOR PUBLIC DRINKING WATER STANDARDS

b. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.

c. ALL REQUIRED MATERIAL TESTING SHALL FOLLOW LOCAL MINIMUM REQUIREMENTS.

10. PERMITTING

a. UNLESS OTHERWISE STATED, CONTRACTOR CANNOT BEGIN CONSTRUCTION ACTIVITIES IN THE CITY'S JURISDICTION, INCLUDING CLEARING AND/OR ROUGH GRADING, BEFORE FIRST OBTAINING ALL CITY APPROVALS AND PERMITS.

b. ALL WORK IN TXDOT RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT REQUIREMENTS.

c. ANY IMPROVEMENTS WITHIN THE TXDOT RIGHT OF WAY OR PROPOSED DEDICATION CANNOT BE INSTALLED WITHOUT A TXDOT DRIVEWAY, UTILITY PERMIT AND/OR DONATION AGREEMENT.

d. WORK COMPLETED BY THE CONTRACTOR WHICH HAS NOT RECEIVED ADEQUATE PERMITS AND A NOTICE TO PROCEED WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.

e. CONSTRUCTION OF INFRASTRUCTURE COMMENCES, ANY DEVIATION FROM THE FINAL PLAT AS APPROVED BY THE CITY ENGINEER, INCLUDING THE PLANS, DRAWINGS AND SPECIFICATIONS MUST HAVE PRIOR APPROVAL BY THE CITY ENGINEER. THE ENGINEER OF RECORD FOR THE DEVELOPER MUST REQUEST APPROVAL OF ANY CHANGES IN WRITING ADDRESSED TO THE CITY ENGINEER.

f. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS PRIOR TO CONSTRUCTION.

g. CONTRACTOR IS SHALL ALL NECESSARY PARTIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTIONS.

h. CONTRACTOR IS REQUIRED TO SCHEDULE ALL NECESSARY INSPECTIONS AT LEAST 48 HOURS IN ADVANCE.

11. TRAFFIC CONTROL

a. ALL CONSTRUCTION OPERATIONS SHALL BE CONDUCTED TO PROVIDE MINIMAL INTERFERENCE TO TRAFFIC. ALL TRAFFIC SIGNAL EQUIPMENT INSTALLATIONS SHALL BE ARRANGED SO AS TO PERMIT CONTINUOUS MOVEMENT OF TRAFFIC IN ALL DIRECTIONS AT ALL TIMES.

b. UNLESS OTHERWISE NOTED, ROADS AND STREETS SHALL BE KEPT OPEN TO TRAFFIC AT ALL TIMES. CONTRACTOR SHALL ARRANGE CONSTRUCTION SO AS TO CLOSE ONLY ONE LANE OF A ROADWAY AT A TIME.

c. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY SIGNAGE NECESSARY DURING CONSTRUCTION ANY TRAFFIC CONTROL MEASURES SHOULD BE IN COMPLIANCE WITH THE LATEST VERSION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES TMUTCD) AND THE CITY OF SEGUIN STANDARDS.

d. CONTRACTOR IS REQUIRED TO OBTAIN ANY AND ALL PERMITS RELATING TO TRAFFIC CONTROL. WORK HOURS MAY BE LIMITED AS A CONDITION OF THE PERMIT.

12. CAUTION NOTE

a. THE CONTRACTOR SHALL BE AWARE THAT A 8" SEWER MAIN EXIST ALONG FM 725. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

b. ACCESSIBLE CURB RAMPS, FOR PASSAGE TO AND THROUGH THE PUBLIC RIGHT OF WAY, SHALL BE CONSTRUCTED WITH THE SUBDIVISION INFRASTRUCTURE. SIDEWALKS WHICH ARE LOCATED WITHIN THE DEVELOPMENT THAT ARE LOCATED ADJACENT TO OPEN SPACE/PARKLAND AREAS SHALL BE CONSTRUCTED AS PART OF THE SUBDIVISION INFRASTRUCTURE.

c. SLOPED SIDEWALKS, FOR PASSAGE TO AND THROUGH DRIVEWAY APRONS, SHALL BE BUILT WITH AND AS PART OF THE PUBLIC SIDEWALK AT TIME OF RESIDENTIAL HOME CONSTRUCTION.

13. MISCELLANEOUS

a. TRENCH EXCAVATION PROTECTION

i. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

b. CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING AND SCHEDULING ALL REQUIRED MEETINGS AND INSPECTIONS AS NEEDED. A MINIMUM OF 48 HOURS' NOTICE MUST BE GIVEN TO THE DEVELOPER'S ENGINEER FOR ANY REQUESTED SITE VISITS.

c. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM A FINAL "SITE CLEAN" AFTER CONSTRUCTION ACTIVITY HAS CEASED AND OBTAINED ALL FINAL ACCEPTANCES. THE CONTRACTOR WILL BE RESPONSIBLE FOR HAULING OFF AND DISPOSING OF ALL INFRASTRUCTURE CONSTRUCTION RELATED DEBRIS, REGARDLESS OF ORIGIN.

d. THE ENGINEER WILL STAKE STREET AND DRAIN IMPROVEMENTS ONE TIME ONLY; ANY CONSTRUCTION STAKES REMOVED OR DESTROYED BY THE CONTRACTOR OR HIS EMPLOYEES WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

e. CONTRACTOR SHALL ALWAYS HAVE THE FOLLOWING AVAILABLE AT THE JOB SITE: THE APPROVED INFRASTRUCTURE DRAWINGS, INCLUDING ALL APPROVED PLAN REVISIONS; ALL NECESSARY PERMITS; NOTICE OF INTENT; EROSION CONTROL PLANS; AND SWPPP. IT IS ENCOURAGED TO KEEP AN EXTRA COPY OF APPROVED SUBMITTALS ON SITE.

f. LOCATION AND DEPTHS OF EXISTING UTILITIES SHOWN ON THE PLANS WERE PLACED ON THE PLANS FROM THE BEST AVAILABLE INFORMATION FROM VARIOUS SOURCES. THE CONTRACTOR IS REQUIRED TO VERIFY THE LOCATION AND DEPTH, PRIOR TO CONSTRUCTION, OF ALL UTILITIES SHOWN ON THE PLANS. THE CONTRACTOR'S ATTENTION IS HEREBY SPECIFICALLY DIRECTED TO THE INFORMATION REGARDING THE EXISTING UTILITY STRUCTURES, LINES AND MAINS WHICH ARE KNOWN TO EXIST AND MAY BE ENCOUNTERED WITHIN AND ADJACENT TO THE LIMITS OF THE WORK COVERED BY THIS CONTRACT. THE EXISTENCE AND LOCATION OF THE UNDERGROUND UTILITIES INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED BUT SHALL BE INVESTIGATED AND VERIFIED BY THE CONTRACTOR BEFORE STARTING WORK. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY DAMAGE TO, AND FOR MAINTENANCE AND PROTECTION OF, EXISTING UTILITIES WHICH CROSS PROPOSED CONSTRUCTION. THE COST OF TEMPORARILY RELOCATING UTILITIES FOR THE CONVENIENCE OF THE CONTRACTOR SHALL BE PAID BY THE CONTRACTOR. IN INSTANCES WHERE GAS OR WATER MAINS ARE EXPOSED DURING THE COURSE OF CONSTRUCTION, THE PURVEYOR SHALL BE NOTIFIED PRIOR TO BACKFILLING OPERATIONS IN ORDER THAT PROTECTIVE COATINGS ON MAINS MAY BE INSPECTED OR REPAIRED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EXACT LOCATION OF THE EXISTING UTILITIES WHICH CROSS PROPOSED CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXCAVATE BRIDGING, IF NECESSARY, DURING CONSTRUCTION, SO AS TO MAINTAIN CONTINUOUS SERVICE. IT SHALL BE HIS RESPONSIBILITY TO BACKFILL AROUND THE UTILITY FACILITY AND TO COMPLETE CONSTRUCTION SO AS TO LEAVE THE LINE FIRMLY AND SECURELY BEDDED IN ITS ORIGINAL POSITION. IN AREAS WHERE UTILITIES NEAR THE CONSTRUCTION AREA WOULD BE DAMAGED BY SOIL MOVEMENT, SLIPS OR CAVE-INS, THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS TO PROTECT SUCH UTILITIES FROM DAMAGE AND THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR AND SHALL PAY FOR THE REPAIR OF SUCH DAMAGE WITHOUT ADDITIONAL COST TO THE OWNER OR THE PURVEYOR.

g. TO ACCESSING PRIVATE PROPERTY, THE CONTRACTOR SHALL NOTIFY SAID PRIVATE PARTY OF WORK BEING COMMENCED, WORK HOURS, ESTIMATED COMPLETION DATE OF FACILITIES AND RESTORATION OF PRIVATE PROPERTY AT LEAST 1 WEEK IN ADVANCE OF MOBILIZATION ON SAID PROPERTY. IT IS ENCOURAGED, THAT CONTRACTORS NOTIFY ALL PRIVATE PARTIES OF WORK IN THE AREA BEFORE CONSTRUCTION OF ANY PART OF THE PROJECT HAS COMMENCED.

h. CLIENT HAS RETAINED THE ENGINEER TO PERFORM STAKING NECESSARY FOR CONSTRUCTION OF INFRASTRUCTURE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REQUEST AND OBTAIN THE SCOPE OF SERVICES PROVIDED BY THE ENGINEER AND REQUEST SAID STAKING FROM THE ENGINEER WITH A MINIMUM NOTICE OF 72 HOURS. ANY QUESTIONS OR DISCREPANCIES WITH THE STAKING PROVIDED SHALL BE SENT TO THE ENGINEER FOR CLARIFICATION PRIOR TO INSTALLATION OF FACILITIES.

i. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL SURVEY MARKERS INCLUDING IRON RODS, PROPERTY CORNERS, OR SURVEY MONUMENTS WITHIN THE LIMITS OF THE CONSTRUCTION SITE AND OUTSIDE THE RIGHT-OF-WAY DURING CONSTRUCTION. ANY SURVEY MARKERS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR AT THEIR OWN COST.

j. STAKING OF STAKES SET BY ENGINEER WILL BE CHARGED TO THE CONTRACTOR BY THE OWNER.

k. SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM A FINAL "SITE CLEAN" AFTER CONSTRUCTION ACTIVITY HAS CEASED AND OBTAINED ALL FINAL ACCEPTANCES. THE CONTRACTOR WILL BE RESPONSIBLE FOR HAULING OFF AND DISPOSING OF ALL INFRASTRUCTURE CONSTRUCTION RELATED DEBRIS, REGARDLESS OF ORIGIN.

l. RESPONSIBILITY SHALL BE UPON THE CONTRACTOR TO PROVIDE AND MAINTAIN AT HIS OWN EXPENSE AN ADEQUATE SUPPLY OF WATER FOR HIS USE FOR CONSTRUCTION AND DOMESTIC CONSUMPTION. ANY CONNECTIONS AND PIPING THAT THE CONTRACTOR DEEMS NECESSARY SHALL BE INSTALLED AT HIS EXPENSE AND AT LOCATIONS APPROVED BY THE WATER PURVEYOR. BEFORE FINAL ACCEPTANCE, ALL TEMPORARY CONNECTIONS AND PIPING INSTALLED SHALL BE REMOVED IN A MANNER SATISFACTORY TO THE ENGINEER.

m. ELECTRIC CURRENT REQUIRED BY THE CONTRACTOR SHALL BE FURNISHED AT HIS OWN EXPENSE. ALL NECESSARY METERS, SWITCHES, CONNECTIONS AND WIRING SHALL BE INSTALLED AT HIS EXPENSE AND AT LOCATIONS APPROVED BY THE ELECTRIC COMPANY. BEFORE FINAL ACCEPTANCE, ALL METERS, SWITCHES, CONNECTIONS AND WIRING INSTALLED BY THE CONTRACTOR SHALL BE REMOVED IN A MANNER SATISFACTORY TO THE ENGINEER.

n. SHALL COORDINATE WITH OWNER FOR PARKING AND PLACEMENT OF ALL MATERIALS AND EQUIPMENT. OWNER WILL NOT BE RESPONSIBLE FOR ANY DAMAGED, STOLEN OR VANDALIZED EQUIPMENT, VEHICLES, ETC.

o. THE CONTRACTOR SHALL SUBMIT A LETTER TO THE ENGINEER AND OWNER PRIOR TO ACCEPTANCE OF INFRASTRUCTURE BY ALL JURISDICTIONAL ENTITIES, THAT CERTIFIES THE FINAL GRADING OF THE LOTS IS WITHIN 0.25' OF THE SURFACE FILE PROVIDED BY THE ENGINEER. IN ADDITION, ALL SPOT ELEVATIONS SHOWN ON THE GRADING PLAN MUST BE CERTIFIED THAT THE GRADE IS WITHIN 0.1'. THE OWNER RESERVES THE RIGHT TO PERFORM AN AS-BUILT TOPOGRAPHIC SURVEY TO CONFIRM SUCH CERTIFICATION AT OR NEAR SUBSTANTIAL GRADING COMPLETION OF THE PROJECT. IF ERRORS OR DISCREPANCIES ARE FOUND, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING GRADES AT THEIR OWN EXPENSE OR PROVIDING A CREDIT TO THE OWNER, AT THE DISCRETION OF THE OWNER. THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR ADDITIONAL AS-BUILT TOPOGRAPHIC SURVEY COSTS INCURRED BY THE OWNER FOR CORRECTIONS TO A MISS ON GRADES.

p. SLOPES AND AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED SMOOTH. THE CONTRACTOR MUST LOOSEN THE SURFACE OF THE SOIL TO A DEPTH OF 2 INCHES AND REMOVE ALL STONES AND DEBRIS OVER 2 INCHES IN ANY DIMENSION. THE AREA SHALL BE REVEGETATED AND MAINTAINED UNTIL SOIL IS STABILIZED IN ALL AREAS. ANY AREA DISTURBED FOR ANY REASON PRIOR TO FINAL ACCEPTANCE OF THE PROJECT SHALL BE CORRECTED BY THE CONTRACTOR.

q. CONTRACTOR MUST CONSTRUCT AND MAINTAIN A PERMANENT STABLE PROTECTIVE COVER (GRASS) FOR EROSION AND SEDIMENT CONTROL ON ALL LAND SURFACES EXPOSED OR DISTURBED BY CONSTRUCTION OF THE PERMITTED PROJECT. THE PROTECTIVE COVER MUST BE INSTALLED WITHIN 14 DAYS AFTER FINAL GRADING OF THE AFFECTED LAND SURFACE. A PERMANENT STABLE COVER MUST BE ESTABLISHED WITHIN 60 DAYS OF ITS INSTALLATION.

r. 85% OF DISTURBED AREAS MUST HAVE VEGETATION ESTABLISHED PRIOR TO ACCEPTANCE BY THE APPLICABLE JURISDICTION.

s. AREAS THAT ARE SEEDED OR SODDED SHALL BE CHECKED PERIODICALLY TO SEE THAT GRASS COVERAGE IS PROPERLY MAINTAINED. DISTURBED AREAS SHALL BE WATERED, FERTILIZED, AND RE-SEEDED OR RE-SODDED IF NECESSARY.

SHSUD GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THE PROJECT SHALL BE APPROVED BY SHSUD AND COMPLY WITH ALL APPLICABLE STANDARDS AND REGULATIONS.

2. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK UNTIL WRITTEN APPROVAL IS OBTAINED FROM SHSUD. WORK COMPLETED BY THE CONTRACTOR, WHICH HAS NOT RECEIVED AN APPROVAL WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR AT THE PREROGATIVE OF SHSUD.

3. THE DEVELOPER DEDICATES THE WATER MAINS UPON COMPLETION BY THE DEVELOPER AND ACCEPTANCE BY SHSUD. SHSUD WILL OWN AND MAINTAIN SAID WATER MAINS WHICH ARE LOCATED WITHIN SAID SUBDIVISION (AS APPLICABLE).

4. CONTRACTOR AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE OWNERS AND THE ENGINEER AND HIS EMPLOYEES, PARTNERS OFFICERS, DIRECTORS, OR CONSULTANTS HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPTING FROM LIABILITY ARISING FROM SOLE NEGLIGENCE OF THE OWNER OR ENGINEER, ENGINEER'S DIRECTORS, OFFICERS, EMPLOYEES, OR CONSULTANTS.

5. CONTRACTOR AND / OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION, ANY DAMAGES DONE TO EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, LANDSCAPING AND STRUCTURES, AND EXISTING UTILITIES (NOT ADJUSTED ON PLANS). COST OF RESTORATIONS, IF ANY, SHALL BE THE CONTRACTOR'S ENTIRE EXPENSE.

7. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN ONE INCH IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN VICINITY OF TREES SHALL PROCEED WITH CAUTION.

8. THE CONTRACTOR SHALL PROCURE ALL PERMITS AND LICENSES, PAY ALL CHARGES, FEES AND TAXES AND GIVE ALL NOTICES NECESSARY AND INCIDENTAL TO THE DUE AND LAWFUL PROSECUTION OF THE WORK.

9. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON THE PLANS BUT NOT INCLUDED ON THE BID SCHEDULE. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED UNDER THE PAY ITEM TO WHICH IT RELATES.

10. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION. THE CONTRACTOR SHALL NOT PERMANENTLY PLACE ANY WASTE MATERIALS IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN DEVELOPMENT PERMIT.

11. THE CONTRACTOR SHALL NOT PLACE ANY MATERIALS ON THE RECHARGE ZONE OF THE EDWARDS AQUIFER WITHOUT AN APPROVED WATER POLLUTION ABATEMENT PLAN FROM THE TCEQ 31 TAC 313.4 AND 31 TAC 313.9.

12. BARRICADES AND WARNING SIGNS SHALL CONFORM TO THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND SHALL BE LOCATED TO PROVIDE MAXIMUM PROTECTION TO THE PUBLIC AS WELL AS CONSTRUCTION PERSONNEL AND EQUIPMENT WHILE ALWAYS PROVIDING CONTINUOUS TRAFFIC FLOW DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL DEVICES DURING CONSTRUCTION.

13. CONTRACTORS ARE REQUIRED TO VERIFY PROJECT ELEVATIONS. THE TERM "MATCH EXISTING" SHALL BE UNDERSTOOD TO SIGNIFY BOTH HORIZONTAL AND VERTICAL ALIGNMENT.

14. THE LOCATION OF UTILITIES, EITHER UNDERGROUND OR OVERHEAD, SHOWN WITHIN THE RIGHT OF WAY ARE APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE BEGINNING CONSTRUCTION OPERATIONS.

15. OSHA REGULATIONS PROHIBIT OPERATIONS THAT WILL BRING PERSONS OR EQUIPMENT WITHIN 10 FEET OF AN ENERGIZED LINE. WHERE WORKMEN AND/OR EQUIPMENT MUST WORK CLOSE TO AN ENERGIZED ELECTRICAL LINE, THE CONTRACTOR SHALL NOTIFY THE ELECTRICAL POWER COMPANY INVOLVED AND MAKE WHATEVER ADJUSTMENTS NECESSARY TO ENSURE THE SAFETY OF THOSE WORKMEN.

16. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION. UTILITY COMPANIES ARE ALSO PREVIOUSLY MENTIONED IN "UTILITY COMPANY NOTIFICATION".

17. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192 (8), GAS COMPANIES MUST ALWAYS MAINTAIN ACCESS TO GAS VALVES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

18. THE CONTRACTOR IS FULLY RESPONSIBLE FOR TRAFFIC CONTROL AND WILL BE RESPONSIBLE FOR FURNISHING ALL TRAFFIC CONTROL DEVICES, AND FLAGGERS. THE CONSTRUCTION METHODS SHALL BE CONDUCTED TO PROVIDE THE LEAST POSSIBLE INTERFERENCE TO TRAFFIC TO ALWAYS PERMIT THE CONTINUOUS MOVEMENT OF THE TRAFFIC IN ONE DIRECTION. THE CONTRACTOR SHALL CLEAN UP AND REMOVE FROM THE WORK AREA ANY LOOSE MATERIAL RESULTING FROM CONTRACT OPERATIONS AT THE END OF EACH WORKDAY.

19. PRIOR TO ORDERING MATERIALS TO BE USED IN CONSTRUCTION, CONTRACTOR SHALL PROVIDE SHSUD WITH FOUR (4) COPIES OF THE SOURCE, TYPE, GRADATION, MATERIAL SPECIFICATION DATA AND / OR SHOP DRAWINGS, AS APPLICABLE, TO SATISFY THE REQUIREMENTS OF THE FOLLOWING ITEMS AND ALL MATERIAL ITEMS REFERRED TO IN THESE LISTED ITEMS:

A. WATER MAINS AND SERVICES

20. NO METER BOXES, VALVES, TO BE SET IN DRIVEWAYS OR SIDEWALKS. ANY METER BOXES SET IN THESE AREAS WILL BE RELOCATED AT THE CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.

21. WHERE THE MINIMUM 9-FOOT SEPARATION DISTANCE BETWEEN SEWER LINES AND WATER LINES / MAINS CANNOT BE MAINTAINED, THE INSTALLATION OF WATER LINES SHALL BE IN STRICT ACCORDANCE WITH TCEQ.

22. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

23. UTILITY TRENCH COMPACTION WITH STREET RIGHT-OF-WAY.

A. ALL UTILITY TRENCH COMPACTION TEST WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER.

B. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE.

C. EACH LAYER OF MATERIAL SHALL BE COMPACTED AS SPECIFIED AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E.

D. THE NUMBER AND LOCATION OF THE REQUIRED TESTS SHALL BE DETERMINED BY THE GEO TECHNICAL ENGINEER AND APPROVED BY SHSUD.

E. UPON THE COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE SHSUD INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

24. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, DRIVEWAYS, OR ROADWAYS. SHSUD WILL NOT BE RESPONSIBLE FOR ANY DAMAGES TO CONCRETE OR PAVED AREAS IF THE DEVELOPER DOES NOT COMPLY.

25. SPRINGS HILL WILL NOT ACCEPT OR PROVIDE SERVICE VIA ANY INFRASTRUCTURE THAT VIOLATES ANY OF THE STANDARDS, CONDITIONS, OR REQUIREMENTS OF THESE NOTES, THE GENERAL NOTES, THE STANDARD DETAILS, STANDARD SPECIFICATIONS, AND/OR ANY APPLICABLE AGREEMENTS REGARDING SERVICE.

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PARK HOUSE UNIT 1

GENERAL NOTES

DATE
08/26/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
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CUDE ENGINEERS
TBPELS No. 10048500

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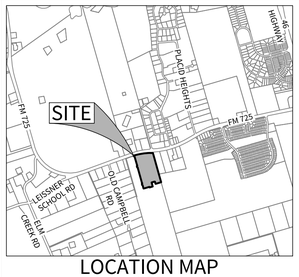
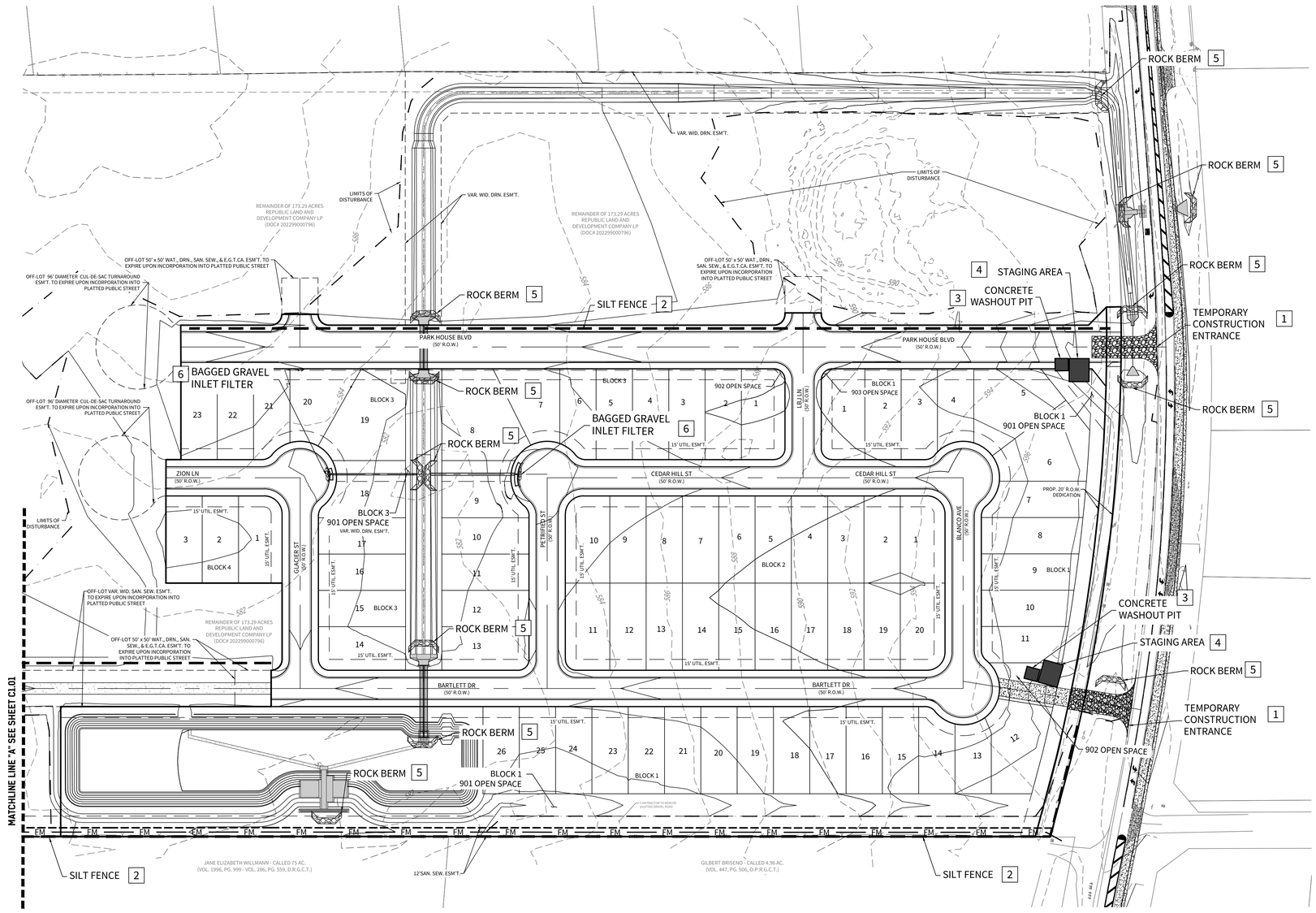
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP
N.T.S

LEGEND

- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- ROCK BERM
- SILT FENCE
- FLOW ARROW
- STAGING AREA
- CONCRETE WASHOUT PIT
- BAGGED INLET FILTER
- PROPERTY LINE
- EXISTING CONTOURS — 930 —
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT ITEM NO. [1]
- SILT FENCE ITEM NO. [2]
- CONCRETE WASHOUT PIT ITEM NO. [3]
- STAGING AREA ITEM NO. [4]
- ROCK BERM ITEM NO. [5]
- BAGGED INLET FILTER ITEM NO. [6]
- LIMITS OF DISTURBANCE — — —



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PARK HOUSE UNIT 1

STORMWATER POLLUTION PREVENTION PLAN

DATE
08/29/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
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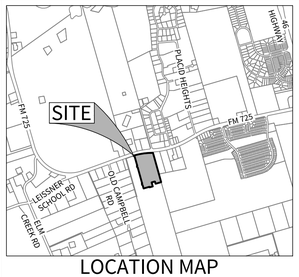
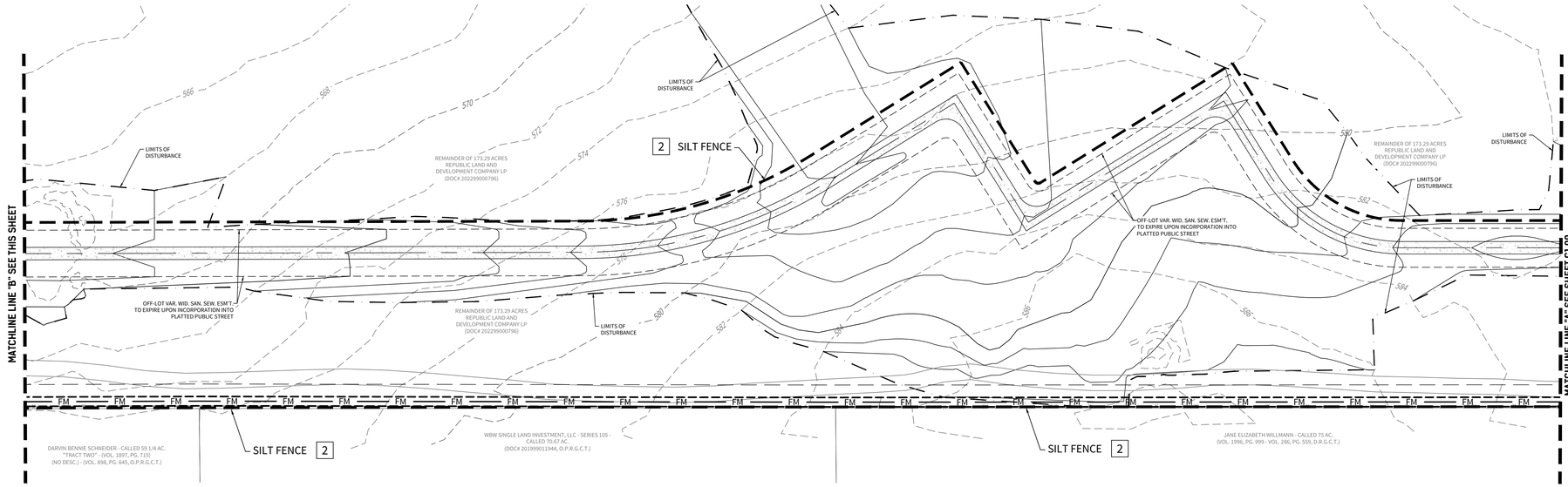
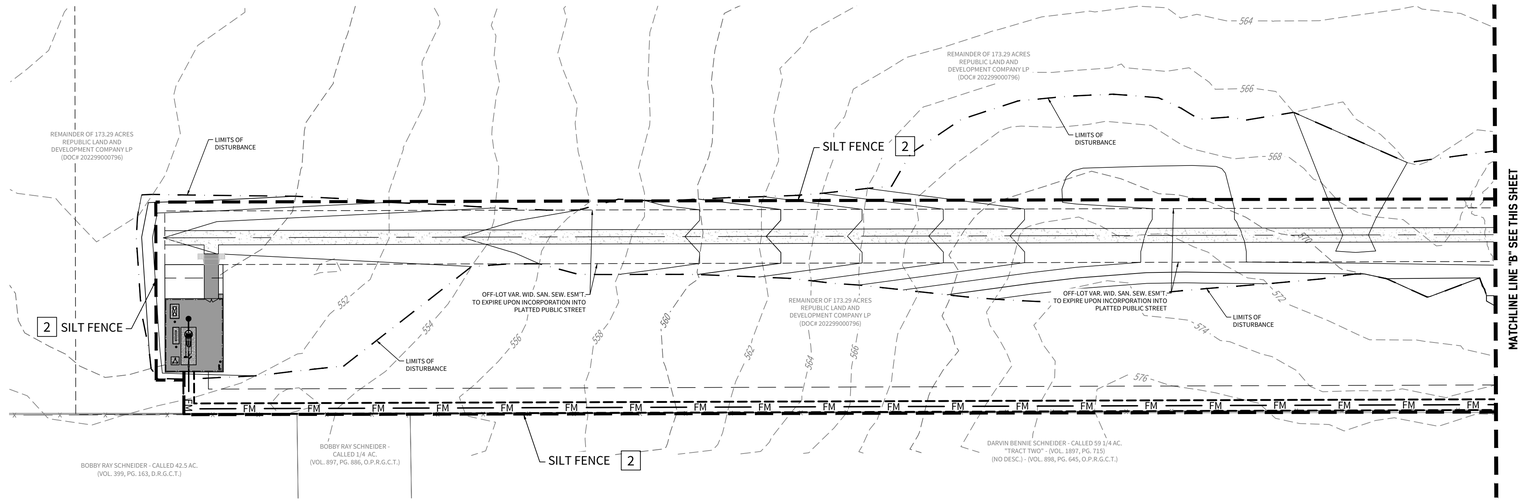


LOCATION MAP
N.T.S

LEGEND

- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- ROCK BERM
- SILT FENCE
- FLOW ARROW
- STAGING AREA
- CONCRETE WASHOUT PIT
- BAGGED INLET FILTER
- PROPERTY LINE
- EXISTING CONTOURS — 930 —
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT ITEM NO. 1
- SILT FENCE ITEM NO. 2
- CONCRETE WASHOUT PIT ITEM NO. 3
- STAGING AREA ITEM NO. 4
- ROCK BERM ITEM NO. 5
- BAGGED INLET FILTER ITEM NO. 6
- LIMITS OF DISTURBANCE





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PARK HOUSE UNIT 1

STORMWATER POLLUTION PREVENTION PLAN

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

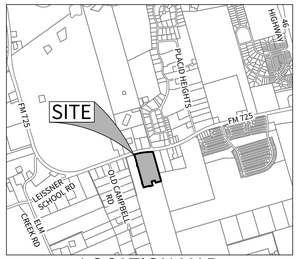
CHECKED BY
JL/AC

REVISIONS
1 2 3 4 5 6 7 8

CUDE ENGINEERS
TBPELS No. 10048500

C1.01

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP
N.T.S

LEGEND

TEMPORARY CONSTRUCTION ENTRANCE/EXIT

ROCK BERM

SILT FENCE

FLOW ARROW

STAGING AREA

CONCRETE WASHOUT PIT

BAGGED INLET FILTER

PROPERTY LINE

EXISTING CONTOURS — 930 —

TEMPORARY CONSTRUCTION ENTRANCE/EXIT ITEM NO. 1

SILT FENCE ITEM NO. 2

CONCRETE WASHOUT PIT ITEM NO. 3

STAGING AREA ITEM NO. 4

ROCK BERM ITEM NO. 5

BAGGED INLET FILTER ITEM NO. 6

LIMITS OF DISTURBANCE

GENERAL NOTES:

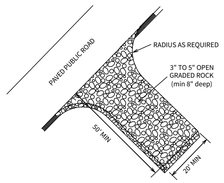
1. THE CONTROL MEASURES CONTAINED HEREON (AND AS FURTHER DESCRIBED BY THE STANDARD SPECIFICATIONS) SHALL BE INSTALLED AND MAINTAINED THROUGHOUT THE CONSTRUCTION CONTRACT TO ASSURE EFFECTIVE AND CONTINUOUS WATER POLLUTION CONTROL DURING CONSTRUCTION AND POST CONSTRUCTION PERIODS.
2. A RAIN GAUGE SHALL BE PROVIDED BY THE CONTRACTOR AND LOCATED AT THE PROJECT SITE. WITHIN 24 HOURS OF A RAINFALL EVENT OF 0.5 INCHES OR MORE (AS MEASURED BY THE PROJECT SITE GAUGE) THE CONTRACTOR AND INSPECTOR WILL INSPECT THE ENTIRE PROJECT TO DETERMINE THE CONDITION OF THE CONTROL MEASURES. SEDIMENT WILL BE REMOVED AND DEVICES REPAIRED AS SOON AS PRACTICABLE BUT NO LATER THAN 7 DAYS AFTER THE SURROUNDING EXPOSED GROUND HAS DRIED SUFFICIENTLY TO PREVENT FURTHER DAMAGE BEING CAUSED BY REPAIR OPERATIONS.
3. THE CONTRACTOR SHALL CLEAN PAVED SURFACES (ADJACENT TO THE CONSTRUCTION AREAS) AS NECESSARY TO REMOVE SEDIMENT WHICH HAS ACCUMULATED ON THE ROADWAY DUE TO STORMWATER FLOWS AND VEHICULAR TRAFFIC THROUGH AND ACROSS THE CONSTRUCTION SITE.
4. IN CASE OF FAILURE ON THE PART OF THE CONTRACTOR TO PREVENT AND CONTROL SOIL EROSION, SEDIMENTATION AND WATER POLLUTION WHICH MAY DEGRADE RECEIVING WATERS, THE DEVELOPER/OWNER RESERVES THE RIGHT TO EMPLOY OUTSIDE ASSISTANCE OR USE OTHER FORCES TO PROVIDE THE NECESSARY CORRECTIVE MEASURES. ALL COST (INCLUDING ENGINEERING) COST WILL BE DEDUCTED FROM ANY MONEYS DUE TO OR TO BECOME DUE TO THE CONTRACTOR.
5. UPON COMPLETION OF CONSTRUCTION AND THE INSTALLATION OF PERMANENT EROSION CONTROL METHODS, A FINAL EROSION CONTROL INSPECTION WILL BE PERFORMED AS PART OF ACCEPTANCE OF THE PROJECT BY THE DEVELOPER/OWNER. IN THE EVENT THAT THE PERMANENT EROSION CONTROL IS INADEQUATE DUE TO IMPROPER DESIGN OR INSTALLATION. THE PERMANENT EROSION CONTROL MEASURES MUST BE CORRECTED OR REDESIGNED TO FUNCTION PROPERLY.
6. THE NPDES NOTICE OF INTENT (N.O.I.) SHALL BE SIGNED AND SUBMITTED BY THE CONTRACTOR AT LEAST 48 HOURS PRIOR TO THE CONTRACTOR MOVING ONTO THE SITE.
7. THE CONTRACTOR SHALL SUBMIT A SIGNED NOTICE OF TERMINATION (N.O.T.). CONTRACTOR TO ENSURE THEY HAVE MET ALL REQUIREMENTS OF THE SWPPP BEFORE FILING A NOTICE OF TERMINATION (N.O.T.).

SOIL STABILIZATION NOTE:

1. PER TPDES REQUIREMENTS, ALL DISTURBED SOILS SHOULD BE SEEDED OR OTHERWISE STABILIZED WITH 14 CALENDAR DAYS AFTER FINAL GRADING OR WHERE CONSTRUCTION ACTIVITY HAS TEMPORARILY CEASED FOR MORE THAN 21 DAYS.

SEQUENCE OF CONSTRUCTION:

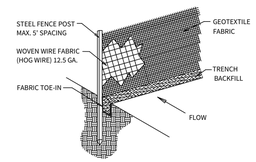
1. OBTAIN CITY APPROVED SITE PREPARATION PLANS, AND TPDES PERMIT (NOT A COPY OF TPDES APPLICATION TO TCEQ), IF APPLICABLE.
2. INSTALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS.
3. BEGIN DEMOLITION ACTIVITIES, IF APPLICABLE.
4. BEGIN SITE CLEARING AND GRADING.
5. RESTORE AND RE-VEGETATE ALL DISTURBED AREAS NOT UNDER IMPERMEABLE IMPROVEMENTS.
6. COMPLETE ANY REMAINING "PUNCH LIST" ITEMS.
7. CONTRACTOR SHALL REMOVE TEMPORARY EROSION CONTROLS AFTER PERMANENT STABILIZATION IS AT LEAST 70% EVENLY ESTABLISHED. RYE IS NOT ACCEPTED.



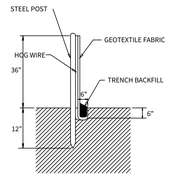
STABILIZED CONSTRUCTION EXIT NOTES:

1. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ON PUBLIC ROADWAY.
2. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS MUST BE REMOVED IMMEDIATELY.

1 TEMPORARY CONSTRUCTION ENTRANCE/EXIT
N.T.S.



SILT FENCE DETAIL

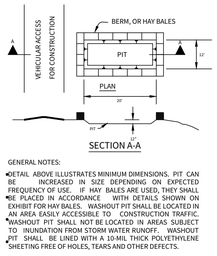


SECTION DETAIL

NOTE:

1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF THE SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, EASEMENTS AND LOTS.
3. THERE WILL BE NO STORMWATER DISCHARGES INTO THE FEMA FLOOD PLAIN.
4. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
5. THE CITY AND/OR COUNTY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

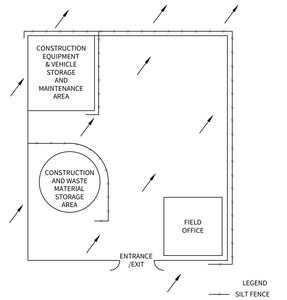
2 STANDARD SILT FENCE
N.T.S.



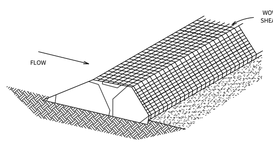
GENERAL NOTES:

- DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE. IF HAY BALES ARE USED, THEY SHALL BE PLACED IN ACCORDANCE WITH DETAILS SHOWN ON EXHIBIT FOR HAY BALES. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.
- WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF. WASHOUT PIT SHALL BE LINED WITH A 10-MIL THICK POLYETHYLENE SHEETING FREE OF HOLES, TEARS AND OTHER DEFECTS.
-

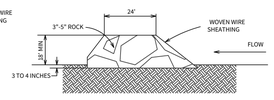
3 CONCRETE TRUCK WASHOUT PIT
N.T.S.



4 TYP. CONSTRUCTION STAGING AREA
N.T.S.

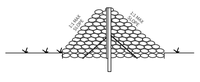


ISOMETRIC PLAN VIEW

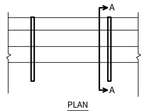


SECTION DETAIL

ROCK BERM
N.T.S.



SECTION A-A



PLAN

General Notes

1. The rock berm shall be inspected weekly or after each rain and the stone shall be replaced when the structure ceases to function as intended due to silt accumulation, washout, etc.
2. When silt reaches a depth of 12", the silt shall be removed and disposed of at an approved site.

5 ROCK BERM W/ SILT FENCE DETAIL
N.T.S.

PLAN

SECTION

GENERAL NOTES:

1. THE GRAVEL BAG MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, POLYAMIDE OR COTTON BURLAP WOVEN FABRIC, MINIMUM UNIT WEIGHT 4 OZ/YD 2 , MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70 PERCENT.
2. THE BAG LENGTH SHOULD BE 24 INCHES, WIDTH SHOULD BE 18 INCHES AND THICKNESS SHOULD BE 6 INCHES.
3. THE GRAVEL BAGS SHOULD BE FILLED WITH ¾" GRAVEL.
4. WHEN A GRAVEL BAG IS FILLED WITH GRAVEL, THE OPEN END OF THE GRAVEL BAG SHOULD BE STAPLED OR TIED WITH NYLON OR POLY CORD.
5. THE GRAVEL BAGS SHOULD BE PLACED AS SHOWN ON THE DETAIL. THE GRAVEL BAGS SHALL BE STACKED TO FORM A CONTINUOUS BARRIER AROUND THE INLETS. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.
6. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
7. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.
8. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
9. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

ELEVATION

6 BAGGED GRAVEL INLET FILTER DETAIL
N.T.S.

CUDEENGINEERS.COM

1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE UNIT 1

STORMWATER POLLUTION PREVENTION DETAILS

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS 1 2 3 4 5 6 7 8

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C1.D1

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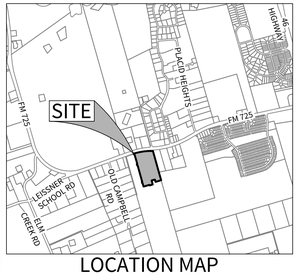
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP
N.T.S

LEGEND

PROPOSED CONTOUR	1000
EXISTING CONTOUR	1000
PROPOSED ELEVATION	1000.00
TYPE OF LOT GRADING	A, B, OR C
SWALE FLOW LINE (ONLY LOT FOR PRIVATE LOT GRADING)	
BLOCK RETAINING WALL	
LIMITS OF GRADING	
GRADE BREAK	

GENERAL SPECIFICATIONS FOR SITE PREPARATION

1. GENERAL DESCRIPTION
THIS ITEM SHALL CONSIST OF ALL CLEARING AND GRUBBING, DEMOLITION, PREPARATION OF LAND TO BE FILLED, FILLING OF THE LAND, SPREADING, COMPACTION TESTING AND INSPECTION OF THE FILL, AND ALL SUBSIDIARY WORK NECESSARY TO COMPLETE THE GRADING OF THE CUT AND FILL AREAS TO CONFORM WITH THE LINES, GRADES AND SLOPES AS SHOWN ON THE APPROVED PLANS.

2. CLEARING THE AREA TO BE FILLED
ALL TIMBER, LOGS, TREES, BRUSH AND RUBBISH SHALL BE REMOVED FROM THE SITE.

3. SCARIFYING THE AREA TO BE FILLED
ALL ORGANIC MATTER SHALL BE REMOVED FROM THE SURFACE UPON WHICH THE FILL IS TO BE PLACED, AND THE SURFACE SHALL THEN BE DISKED OR SCARIFIED TO A MINIMUM DEPTH OF SIX INCHES (6"), ALL SURFACE RUTS OR OTHER UNEVEN FEATURES WILL BE LEVELED PRIOR TO FIELD DENSITY TESTING. WHERE FILLS ARE MADE ON HILLSIDES OR SLOPES, THE SLOPE OF THE ORIGINAL GROUND UPON WHICH THE FILL IS TO BE PLACED SHALL BE DISKED OR SCARIFIED. WHERE THE SLOPE RATIO OF THE ORIGINAL GROUND IS STEEPER THAN 5 HORIZONTAL TO 1 VERTICAL, THE BANK SHALL BE STEPPED OR BENCHED. GROUND SLOPES WHICH ARE FLATTER THAN 5 TO 1 SHALL BE BENCHED WHEN CONSIDERED NECESSARY BY THE GEOTECHNICAL ENGINEER.

4. COMPACTING THE AREA TO BE FILLED
FOLLOWING THE CLEARING AND DISKING OR SCARIFYING OF THE FILL AREA, IT SHALL BE BLADED UNTIL IT IS UNIFORM AND FREE FROM LARGE CLODS. THE AREA SHALL BE BROUGHT TO THE ADEQUATE MOISTURE CONTENT AND COMPACTED (TYPICALLY) TO NOT LESS THAN NINETY PERCENT (90%) OF MAXIMUM DENSITY IN ACCORDANCE WITH THE CURRENT ASTM D 1557 COMPACTION PROCEDURE, OR 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH THE CURRENT THD--TEX--113--E COMPACTION PROCEDURE.

5. FILL MATERIALS
THE MATERIALS USED SHALL BE FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES, SUCH AS TREES, BRUSH AND RUBBISH.

6. DEPTH AND MIXING OF FILL LAYERS
THE SELECTED FILL MATERIAL SHALL BE PLACED IN LEVEL, UNIFORM LAYERS WHICH, WHEN COMPACTED, SHALL HAVE A DENSITY CONFORMING TO THAT STIPULATED ABOVE. EACH LAYER SHALL BE THOROUGHLY MIXED DURING THE SPREADING TO ENSURE UNIFORMITY OF MATERIAL IN EACH LAYER. COMPACTED LAYER THICKNESS MAY VARY DEPENDING ON THE COMPACTION EQUIPMENT OF DEMONSTRATED CAPABILITY. THE MAXIMUM LOOSE DEPTH FOR ANY MATERIAL SHALL NOT EXCEED TWELVE INCHES (12"). FOR TESTING REQUIREMENTS OF FILL MATERIAL, SEE DENSITY TESTING.

7. ROCK
WHEN FILL MATERIAL INCLUDES ROCK, THE MAXIMUM ROCK SIZE SHALL BE AS APPROVED BY THE GEOTECHNICAL ENGINEER AND THE CITY OF SEGUIN THROUGH THE CONSTRUCTION PHASE SUBMITTAL PROCESS. NO LARGE ROCKS SHALL BE ALLOWED TO NEST AND ALL VOIDS MUST BE FILLED WITH SMALL STONES OR SOIL AND ADEQUATELY COMPACTED. NO LARGE ROCKS WILL BE PERMITTED WITHIN EIGHTEEN INCHES (18") OF THE FINISHED GRADE.

8. COMPACTION OF FILL LAYER
COMPACTION EQUIPMENT SHALL BE CAPABLE OF COMPACTING THE FILL TO THE SPECIFIED DENSITY. COMPACTION SHALL BE ACCOMPLISHED WHILE THE FILL MATERIAL IS AT OR NEAR THE APPROPRIATE MOISTURE CONTENT. COMPACTION OF EACH LAYER SHALL BE CONTINUOUS OVER THE ENTIRE STRUCTURAL AREA (BENEATH PROPOSED STRUCTURES).

9. COMPACTION OF SLOPES
THE FACES OF FILL SLOPES SHALL BE COMPACTED. COMPACTING OPERATIONS SHALL BE CONTINUED UNTIL THE SLOPE FACES ARE STABLE BUT NOT TOO DENSE FOR PLANTING ON THE SLOPES. COMPACTION OF THE SLOPE FACES MAY BE DONE PROGRESSIVELY IN INCREMENTS OF THREE TO FIVE FEET (3' TO 5') IN FILL HEIGHT AS THIS FILL PROGRESSES OR AFTER THE FILL HAS BEEN BROUGHT TO ITS TOTAL HEIGHT.

10. MOISTURE CONTENT
THE FILL MATERIAL SHALL BE COMPACTED AT THE APPROPRIATE MOISTURE CONTENT SPECIFIED FOR THE SOILS BEING USED. APPROPRIATE MOISTURE CONTENT IS DEFINED, TYPICALLY, AS OPTIMUM MOISTURE CONTENT; HOWEVER, FOR EXPANSIVE SOILS IT MAY BE GREATER THAN OPTIMUM MOISTURE CONTENT, AND OTHER MOISTURE CONTENTS MAY BE NECESSARY TO PRODUCE THE DESIRED RESULTS WITH CERTAIN SOILS.

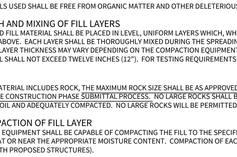
11. DENSITY TESTS
FIELD DENSITY TESTS SHALL BE PERFORMED ON LAYERS OF FILL WHEN THE FILL IS BEING PLACED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE MAXIMUM FILL HEIGHT BETWEEN DENSITY TESTING SHALL BE 16 INCHES LOOSE OR 12" COMPACTED PER TXDOT ITEM 132,EMBANKMENT, DENSITY CONTROL. ALL TESTING SHALL BE REQUESTED BY THE CONTRACTOR TO MEET THE CONTRACTOR'S CONSTRUCTION SCHEDULE. NOTIFICATION BY THE CONTRACTOR TO CONDUCT TESTS SHALL BE AT LEAST THE DAY BEFORE. THIS NOTIFICATION SHALL INCLUDE THE FILL AREA LOCATION (LOT AND BLOCK), THE LIFT OR HEIGHT OF FILL AND APPROXIMATE DESIRED TIME OF TESTING. WHEN THESE TESTS INDICATE THAT THE DENSITY OF ANY LAYER OF FILL OR PORTION THEREOF IS BELOW THE REQUIRED DENSITY, THE PARTICULAR LAYER OR PORTION SHALL BE REWORKED AND RETESTED AT THE EXPENSE OF THE CONTRACTOR UNLESS THE CONTRACTOR CAN SHOW EVIDENCE THAT CIRCUMSTANCES BEYOND HIS CONTROL REQUIRED THE RETESTING. GENERALLY, THE SPECIFIC TESTING WILL BE AS FOLLOWS AND CONDUCTED BY GEOTECHNICAL ENGINEER.

A. THE LAND TO BE FILLED (PREPARED SUBGRADE) SHALL BE PREPARED AND TESTED AT A FREQUENCY AS DETERMINED BY THE GEOTECHNICAL ENGINEER.
B. THE FIRST LIFT OF COMPACTED FILL (GENERALLY 8 TO 12-IN.) SHALL BE TESTED AS DETERMINED BY THE GEOTECHNICAL ENGINEER. ANY AREAS SUPPORTING THE PROPOSED STRUCTURES REQUIRING FILL SHALL BE TESTED FOR DENSITY COMPLIANCE.
C. FILLS SHALL BE TESTED IN ACCORDANCE WITH TXDOT ITEM 132 3.4.2.
D. TEST RESULTS WILL BE PROVIDED BY THE FIELD TECHNICIAN TO THE CONTRACTOR WHEN POSSIBLE; HOWEVER, ALL TEST RESULTS ARE TO BE REVIEWED BY THE GEOTECHNICAL ENGINEER FOR COMPLIANCE. THE ENGINEER WILL NOTIFY THE CONTRACTOR OF ALL TEST RESULTS AND TEST RESULTS SHALL BE PROVIDED TO THE CITY OF SEGUIN THROUGHOUT THE PROJECT AS REPORTS ARE COMPLETED, NOT AT END OF PROJECT/ACCEPTANCE PHASE.

12. CUT/FILL LOTS
AREAS INVOLVING CUT ON ONE PORTION AND FILL ON ANOTHER PORTION OF A SPECIFIC LOT SHALL BE PREPARED TO A MINIMUM DEPTH OF 6-IN. AND WILL BE THE SAME MATERIAL CLASSIFICATION AT THE SAME COMPACTION AND MOISTURE CONTENT. A MINIMUM OF TWO (2) FIELD DENSITY TESTS SHALL BE REQUIRED ON EACH CUT/FILL LOT FOR THE PURPOSE OF DETERMINING UNIFORMITY OF THE AREA SUPPORTING THE PROPOSED STRUCTURES.

NOTES:

1. STREET PAVEMENT CONTOURS SHOWN. REFERENCE GEOTECH REPORT FOR PAVEMENT SECTIONS.
2. HOUSE PADS SHALL HAVE A MINIMUM 20' FRONTAGE, 15' REAR AND 5' SIDE SETBACK UNLESS NOTED OTHERWISE. CONTRACTOR SHALL REFER TO THE SUBDIVISION PLAT TO VERIFY ALL SETBACKS PRIOR TO CONSTRUCTION.
3. MINIMUM SLAB EXPOSURE IS 1.0'.
4. TYPICAL PAD SIZES IS 40' X 80' UNLESS NOTED OTHERWISE ON PLAN.
5. MAXIMUM REAR SETBACK SLOPE = 15%
6. HOUSE PAD SWALES TO BE CONSTRUCTED WITH HOME BUILDING.
7. CONTRACTOR SHALL ENSURE THAT POSITIVE DRAINAGE IS MAINTAINED AWAY FROM ALL HOUSE PADS. NO WATER PONDING SHALL BE ALLOWED.

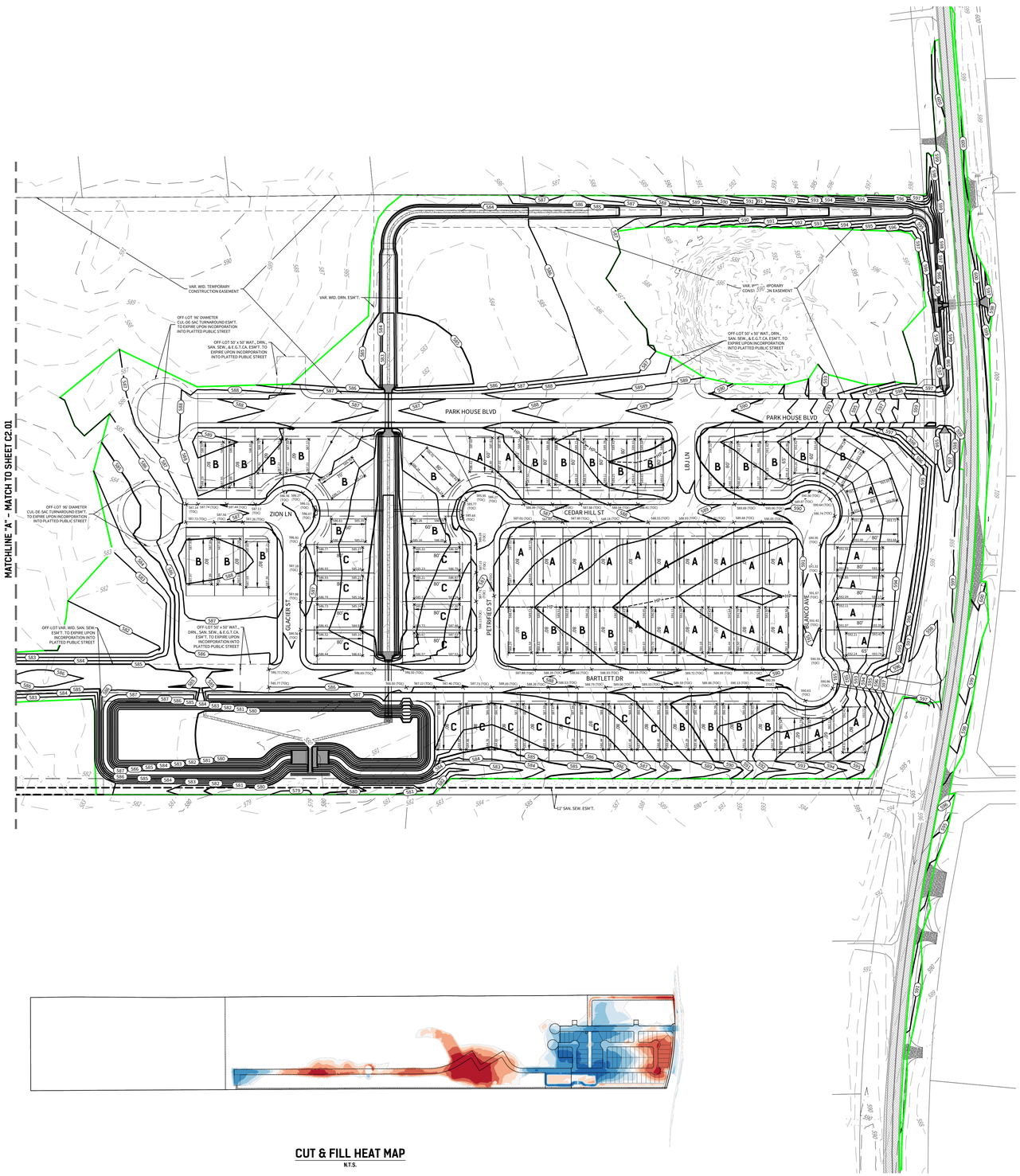


TYPICAL LOT SITE PLAN
N.T.S.

Cut Fill Table		
Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
97,3661.31	91,928.94	5,432.37 (CUT)

Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	-99.000	-5.000	
2	-5.000	-3.000	
3	-3.000	-1.500	
4	-1.500	-0.500	
5	-0.500	0.500	
6	0.500	1.500	
7	1.500	3.000	
8	3.000	5.000	
9	5.000	99.000	

CUT & FILL HEAT MAP
N.T.S.



SCALE: 1"=100'
0 100 200

CUDEENGINEERS.COM

1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE UNIT 1

GRADING PLAN

DATE
08/29/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1 2 3 4 5 6 7 8

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C2.00

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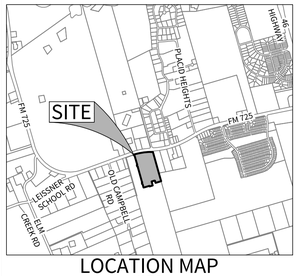

LOCATION MAP
N.T.S

LEGEND

PROPOSED CONTOUR	1000
EXISTING CONTOUR	1000
PROPOSED ELEVATION	1000.00
TYPE OF LOT GRADING	A, B, OR C
SWALE FLOW LINE (ONLY LOT FOR PRIVATE LOT GRADING)	
BLOCK RETAINING WALL	
LIMITS OF GRADING	
GRADE BREAK	

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WHEN FILL MATERIAL INCLUDES ROCK, THE MAXIMUM ROCK SIZE SHALL BE AS APPROVED BY THE GEOTECHNICAL ENGINEER AND THE CITY OF SEGUIN THROUGH THE CONSTRUCTION PHASE SUBMITTAL PROCESS. NO LARGE ROCKS SHALL BE ALLOWED TO NEST AND ALL VOIDS MUST BE FILLED WITH SMALL STONES OR SOIL AND ADEQUATELY COMPACTED. NO LARGE ROCKS WILL BE PERMITTED WITHIN EIGHTEEN INCHES (18") OF THE FINISHED GRADE.

8. COMPACTION OF FILL LAYER
COMPACTION EQUIPMENT SHALL BE CAPABLE OF COMPACTING THE FILL TO THE SPECIFIED DENSITY. COMPACTION SHALL BE ACCOMPLISHED WHILE THE FILL MATERIAL IS AT OR NEAR THE APPROPRIATE MOISTURE CONTENT. COMPACTION OF EACH LAYER SHALL BE CONTINUOUS OVER THE ENTIRE STRUCTURAL AREA (BENEATH PROPOSED STRUCTURES).

9. COMPACTION OF SLOPES
THE FACES OF FILL SLOPES SHALL BE COMPACTED. COMPACTING OPERATIONS SHALL BE CONTINUED UNTIL THE SLOPE FACES ARE STABLE BUT NOT TOO DENSE FOR PLANTING ON THE SLOPES. COMPACTION OF THE SLOPE FACES MAY BE DONE PROGRESSIVELY IN INCREMENTS OF THREE TO FIVE FEET (3' TO 5') IN FILL HEIGHT AS THIS FILL PROGRESSES OR AFTER THE FILL HAS BEEN BROUGHT TO ITS TOTAL HEIGHT.

10. MOISTURE CONTENT
THE FILL MATERIAL SHALL BE COMPACTED AT THE APPROPRIATE MOISTURE CONTENT SPECIFIED FOR THE SOILS BEING USED. APPROPRIATE MOISTURE CONTENT IS DEFINED, TYPICALLY, AS OPTIMUM MOISTURE CONTENT; HOWEVER, FOR EXPANSIVE SOILS IT MAY BE GREATER THAN OPTIMUM MOISTURE CONTENT, AND OTHER MOISTURE CONTENTS MAY BE NECESSARY TO PRODUCE THE DESIRED RESULTS WITH CERTAIN SOILS.

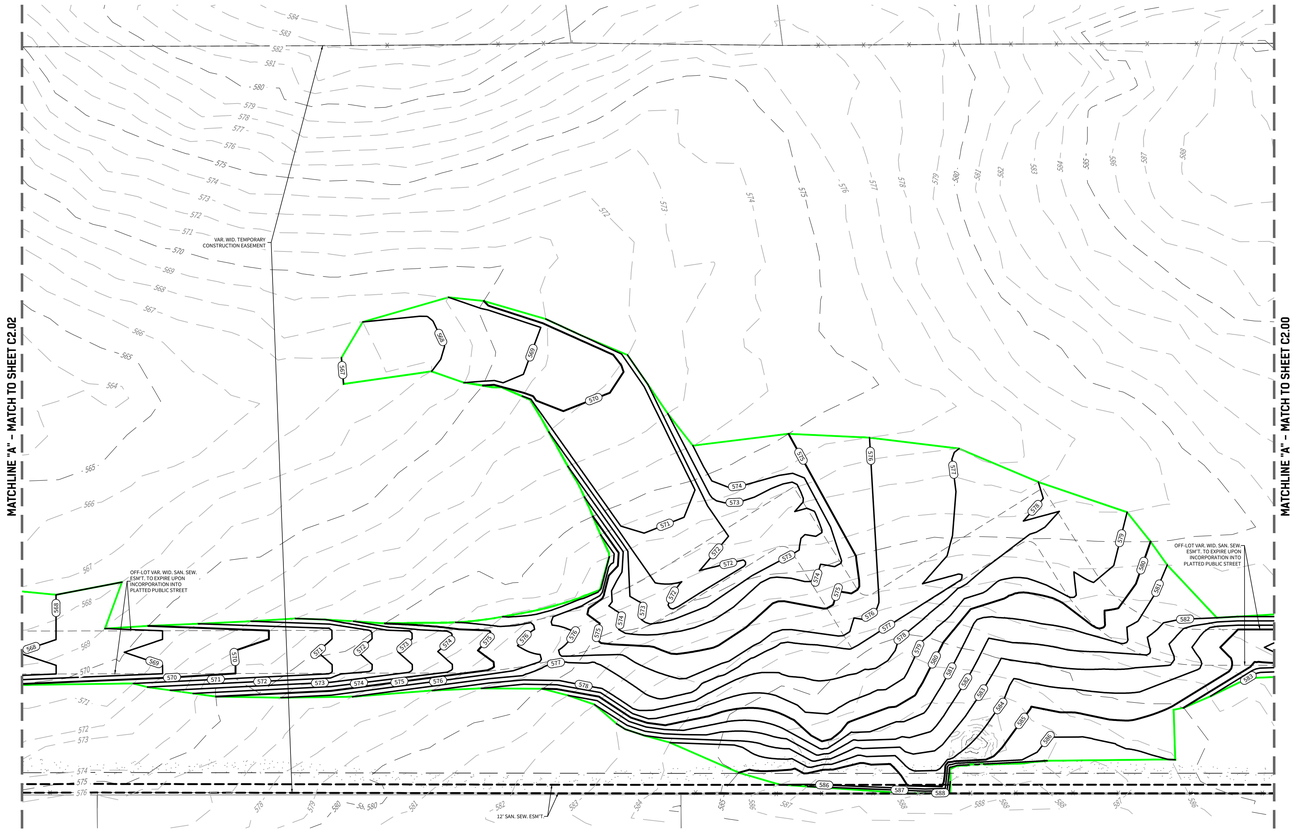
11. DENSITY TESTS
FIELD DENSITY TESTS SHALL BE PERFORMED ON LAYERS OF FILL WHEN THE FILL IS BEING PLACED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE MAXIMUM FILL HEIGHT BETWEEN DENSITY TESTING SHALL BE 16 INCHES LOOSE OR 12" COMPACTED PER TXDOT ITEM 132,EMBANKMENT, DENSITY CONTROL. ALL TESTING SHALL BE REQUESTED BY THE CONTRACTOR TO MEET THE CONTRACTOR'S CONSTRUCTION SCHEDULE. NOTIFICATION BY THE CONTRACTOR TO CONDUCT TESTS SHALL BE AT LEAST THE DAY BEFORE. THIS NOTIFICATION SHALL INCLUDE THE FILL AREA LOCATION (LOT AND BLOCK), THE LIFT OR HEIGHT OF FILL AND APPROXIMATE DESIRED TIME OF TESTING. WHEN THESE TESTS INDICATE THAT THE DENSITY OF ANY LAYER OF FILL OR PORTION THEREOF IS BELOW THE REQUIRED DENSITY, THE PARTICULAR LAYER OR PORTION SHALL BE REWORKED AND RETESTED AT THE EXPENSE OF THE CONTRACTOR UNLESS THE CONTRACTOR CAN SHOW EVIDENCE THAT CIRCUMSTANCES BEYOND HIS CONTROL REQUIRED THE RETESTING. GENERALLY, THE SPECIFIC TESTING WILL BE AS FOLLOWS AND CONDUCTED BY GEOTECHNICAL ENGINEER.

A. THE LAND TO BE FILLED (PREPARED SUBGRADE) SHALL BE PREPARED AND TESTED AT A FREQUENCY AS DETERMINED BY THE GEOTECHNICAL ENGINEER.
B. THE FIRST LIFT OF COMPACTED FILL (GENERALLY 8 TO 12-IN.) SHALL BE TESTED AS DETERMINED BY THE GEOTECHNICAL ENGINEER. ANY AREAS SUPPORTING THE PROPOSED STRUCTURES REQUIRING FILL SHALL BE TESTED FOR DENSITY COMPLIANCE.
C. FILLS SHALL BE TESTED IN ACCORDANCE WITH TXDOT ITEM 132.3.4.2.
D. TEST RESULTS WILL BE PROVIDED BY THE FIELD TECHNICIAN TO THE CONTRACTOR WHEN POSSIBLE; HOWEVER, ALL TEST RESULTS ARE TO BE REVIEWED BY THE GEOTECHNICAL ENGINEER FOR COMPLIANCE. THE ENGINEER WILL NOTIFY THE CONTRACTOR OF ALL TEST RESULTS AND TEST RESULTS SHALL BE PROVIDED TO THE CITY OF SEGUIN THROUGHOUT THE PROJECT AS REPORTS ARE COMPLETED, NOT AT END OF PROJECT/ACCEPTANCE PHASE.

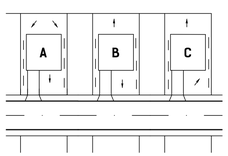
12. CUT/FILL LOTS
AREAS INVOLVING CUT ON ONE PORTION AND FILL ON ANOTHER PORTION OF A SPECIFIC LOT SHALL BE PREPARED TO A MINIMUM DEPTH OF 6-IN. AND WILL BE THE SAME MATERIAL CLASSIFICATION AT THE SAME COMPACTION AND MOISTURE CONTENT. A MINIMUM OF TWO (2) FIELD DENSITY TESTS SHALL BE REQUIRED ON EACH CUT/FILL LOT FOR THE PURPOSE OF DETERMINING UNIFORMITY OF THE AREA SUPPORTING THE PROPOSED STRUCTURES.

NOTES:

1. STREET PAVEMENT CONTOURS SHOWN. REFERENCE GEOTECH REPORT FOR PAVEMENT SECTIONS.
2. HOUSE PADS SHALL HAVE A MINIMUM 20' FRONTAGE, 15' REAR AND 5' SIDE SETBACK UNLESS NOTED OTHERWISE. CONTRACTOR SHALL REFER TO THE SUBDIVISION PLAT TO VERIFY ALL SETBACKS PRIOR TO CONSTRUCTION.
3. MINIMUM SLAB EXPOSURE IS 1.0'.
4. TYPICAL PAD SIZES IS 40' X 80' UNLESS NOTED OTHERWISE ON PLAN.
5. MAXIMUM REAR SETBACK SLOPE = 15%
6. HOUSE PAD SWALES TO BE CONSTRUCTED WITH HOME BUILDING.
7. CONTRACTOR SHALL ENSURE THAT POSITIVE DRAINAGE IS MAINTAINED AWAY FROM ALL HOUSE PADS. NO WATER PONDING SHALL BE ALLOWED.

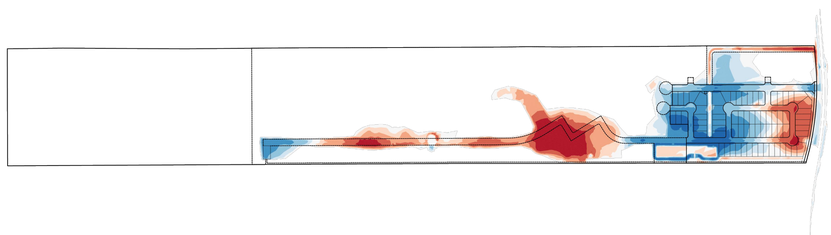


Cut Fill Table		
Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
97,3661.31	91,928.94	5,432.37 (CUT)



TYPICAL LOT SITE PLAN
N.T.S.

Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	-99.000	-5.000	
2	-5.000	-3.000	
3	-3.000	-1.500	
4	-1.500	-0.500	
5	-0.500	0.500	
6	0.500	1.500	
7	1.500	3.000	
8	3.000	5.000	
9	5.000	99.000	



CUT & FILL HEAT MAP
N.T.S.

SCALE: 1"=100'
0 100 200

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1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE UNIT 1

GRADING PLAN

DATE
08/28/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

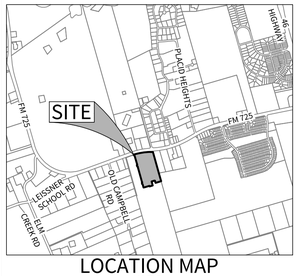
STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPE/LS No. 10048500

C2.01

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

R:\04154-000\10-2500\Plans\C2.00-GRADING PLAN.dwg 2025/08/28 4:44pm svaldepeni



LOCATION MAP
N.T.S

LEGEND

PROPOSED CONTOUR	1000
EXISTING CONTOUR	1000
PROPOSED ELEVATION	1000.00
TYPE OF LOT GRADING	A, B, OR C
SWALE FLOW LINE (ONLY LOT FOR PRIVATE LOT GRADING)	
BLOCK RETAINING WALL	
LIMITS OF GRADING	
GRADE BREAK	

GENERAL SPECIFICATIONS FOR SITE PREPARATION

1. GENERAL DESCRIPTION
THIS ITEM SHALL CONSIST OF ALL CLEARING AND GRUBBING, DEMOLITION, PREPARATION OF LAND TO BE FILLED, FILLING OF THE LAND, SPREADING, COMPACTION TESTING AND INSPECTION OF THE FILL, AND ALL SUBSIDIARY WORK NECESSARY TO COMPLETE THE GRADING OF THE CUT AND FILL AREAS TO CONFORM WITH THE LINES, GRADES AND SLOPES AS SHOWN ON THE APPROVED PLANS.

2. CLEARING THE AREA TO BE FILLED
ALL TIMBER, LOGS, TREES, BRUSH AND RUBBISH SHALL BE REMOVED FROM THE SITE.

3. SCARIFYING THE AREA TO BE FILLED
ALL ORGANIC MATTER SHALL BE REMOVED FROM THE SURFACE UPON WHICH THE FILL IS TO BE PLACED, AND THE SURFACE SHALL THEN BE DISKED OR SCARIFIED TO A MINIMUM DEPTH OF SIX INCHES (6"). ALL SURFACE RUTS OR OTHER UNEVEN FEATURES WILL BE LEVELED PRIOR TO FIELD DENSITY TESTING. WHERE FILLS ARE MADE ON HILLSIDES OR SLOPES, THE SLOPE OF THE ORIGINAL GROUND UPON WHICH THE FILL IS TO BE PLACED SHALL BE DISKED OR SCARIFIED. WHERE THE SLOPE RATIO OF THE ORIGINAL GROUND IS STEEPER THAN 5 HORIZONTAL TO 1 VERTICAL, THE BANK SHALL BE STEPPED OR BENCHED. GROUND SLOPES WHICH ARE FLATTER THAN 5 TO 1 SHALL BE BENCHED WHEN CONSIDERED NECESSARY BY THE GEOTECHNICAL ENGINEER.

4. COMPACTING THE AREA TO BE FILLED
FOLLOWING THE CLEARING AND DISKING OR SCARIFYING OF THE FILL AREA, IT SHALL BE BLADED UNTIL IT IS UNIFORM AND FREE FROM LARGE CLODS. THE AREA SHALL BE BROUGHT TO THE ADEQUATE MOISTURE CONTENT AND COMPACTED (TYPICALLY) TO NOT LESS THAN NINETY PERCENT (90%) OF MAXIMUM DENSITY IN ACCORDANCE WITH THE CURRENT ASTM D 1557 COMPACTION PROCEDURE, OR 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH THE CURRENT THD-TEX-113-E COMPACTION PROCEDURE.

5. FILL MATERIALS
THE MATERIALS USED SHALL BE FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES, SUCH AS TREES, BRUSH AND RUBBISH.

6. DEPTH AND MIXING OF FILL LAYERS
THE SELECTED FILL MATERIAL SHALL BE PLACED IN LEVEL, UNIFORM LAYERS WHICH, WHEN COMPACTED, SHALL HAVE A DENSITY CONFORMING TO THAT STIPULATED ABOVE. EACH LAYER SHALL BE THOROUGHLY MIXED DURING THE SPREADING TO ENSURE UNIFORMITY OF MATERIAL IN EACH LAYER. COMPACTED LAYER THICKNESS MAY VARY DEPENDING ON THE COMPACTION EQUIPMENT OF DEMONSTRATED CAPABILITY. THE MAXIMUM LOOSE DEPTH FOR ANY MATERIAL SHALL NOT EXCEED TWELVE INCHES (12"). FOR TESTING REQUIREMENTS OF FILL MATERIAL, SEE DENSITY TESTING.

7. ROCK
WHEN FILL MATERIAL INCLUDES ROCK, THE MAXIMUM ROCK SIZE SHALL BE AS APPROVED BY THE GEOTECHNICAL ENGINEER AND THE CITY OF SEGUIN THROUGH THE CONSTRUCTION PHASE SUBMITTAL PROCESS. NO LARGE ROCKS SHALL BE ALLOWED TO NEST AND ALL VOIDS MUST BE FILLED WITH SMALL STONES OR SOIL AND ADEQUATELY COMPACTED. NO LARGE ROCKS WILL BE PERMITTED WITHIN EIGHTEEN INCHES (18") OF THE FINISHED GRADE.

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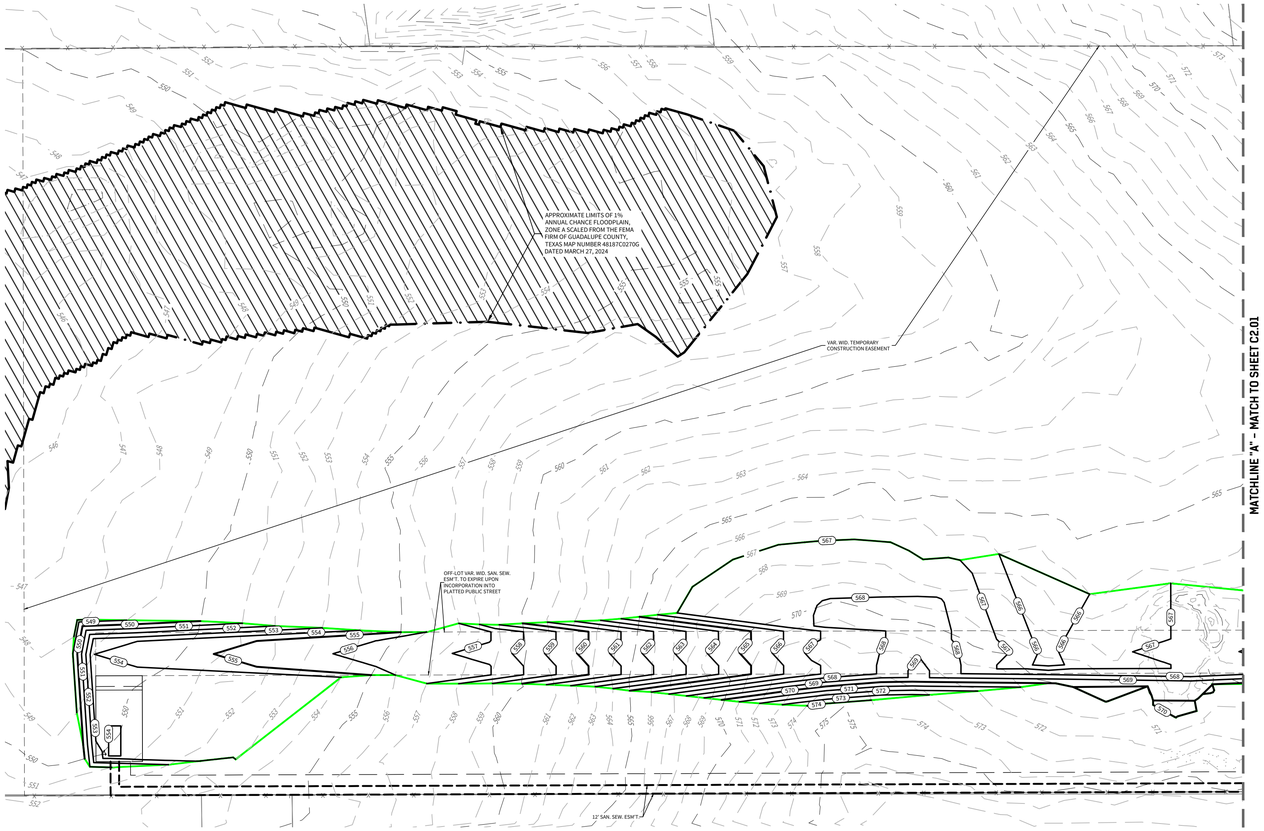

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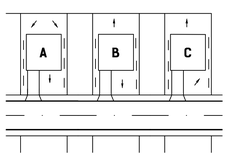

TYPICAL LOT SITE PLAN
N.T.S.

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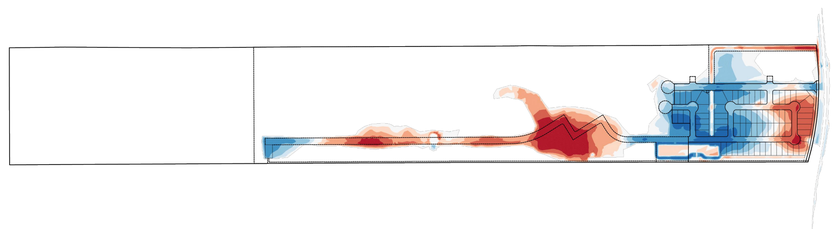
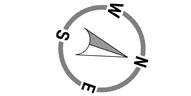
7	1.500	3.000	
8	3.000	5.000	
9	5.000	99.000	



CUT & FILL HEAT MAP
N.T.S.



SCALE: 1"=100'
0 100 200

CUDEENGINEERS.COM
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1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE UNIT 1
GRADING PLAN

DATE
08/28/2025
PROJECT NO.
04154-000
DRAWN BY
SG/JVA
CHECKED BY
JL/AC

REVISIONS
1 2 3 4 5 6 7 8

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25
CUDE ENGINEERS
TBPELS No. 10048500

C2.02

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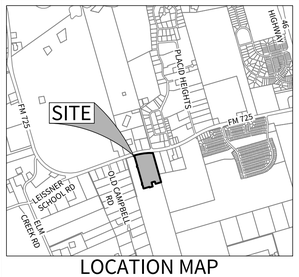
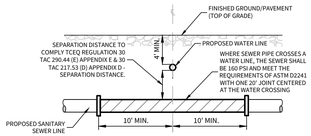


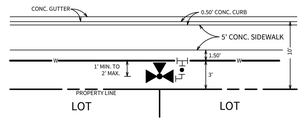
LOCATION MAP
N.T.S

LEGEND

- EXISTING SANITARY SEWER — EX.8"SS
- PROPOSED SANITARY SEWER — 8"SS
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED WATER MAIN — 8"W
- PROPOSED STANDARD FIRE HYDRANT
- PROPOSED STANDARD GATE VALVE
- PROPOSED LIGHT POLE
- UTILITY ESMT. — UTILITY ESMT.
- EXISTING WATER MAIN — EX. 8"W
- EXISTING OVERHEAD ELECTRIC — OHE
- PROPOSED OVERHEAD ELECTRIC
- PROPOSED TRANSFORMER
- PROPOSED SECTIONALIZING BOX
- PROPOSED SECONDARY PEDESTAL
- EXISTING POWER POLE

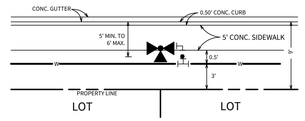


TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.



NOTE:
1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

TYPICAL FIRE HYDRANT DETAIL (5' SIDEWALK / 50' ROW)
N.T.S.



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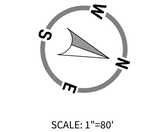
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

TYPICAL FIRE HYDRANT DETAIL (5' SIDEWALK / 60' ROW)
N.T.S.



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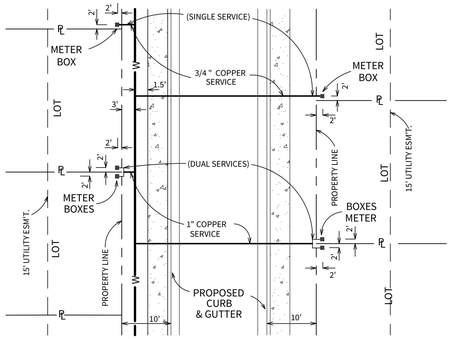
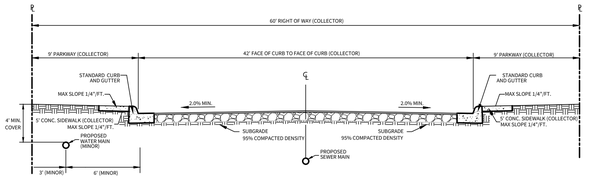
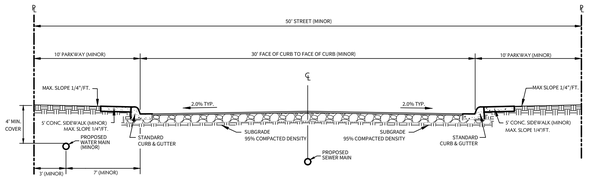


WATER METER BOX LOCATION (50' R.O.W. / 5' SDWK)
N.T.S.



COLLECTOR STREET CROSS SECTION
N.T.S.



MINOR STREET CROSS SECTION
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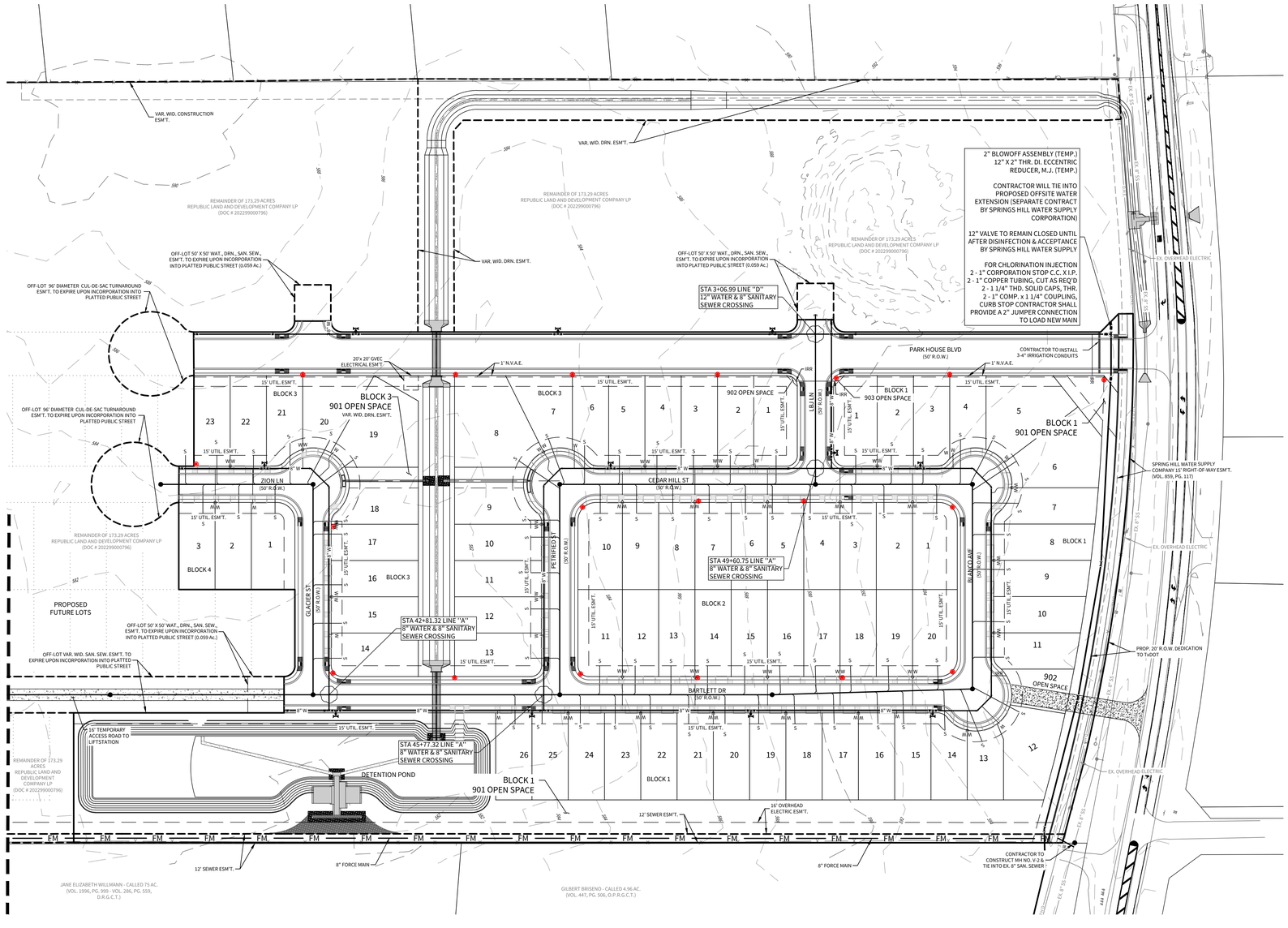

CAUTION!!
EXISTING UTILITIES ARE WITHIN THE LIMITS OF CONSTRUCTION. CONTRACTORS SHALL EXERCISE EXTRA CARE IN DIGGING ANY TRENCH FOR PROPOSED UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE, VERIFY THE EXACT LOCATION & IDENTIFY AREA OF CONFLICTS WITH EXISTING UTILITIES AND SHALL NOTIFY THE ENGINEER IF CONFLICT IS FOUND.

TRENCH EXCAVATION PROTECTION
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PARK HOUSE UNIT 1

UTILITY PLAN

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

DATE
08/29/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25
CUDE ENGINEERS
TBPE/LS No. 10048500

C3.00

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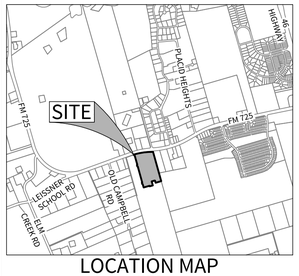


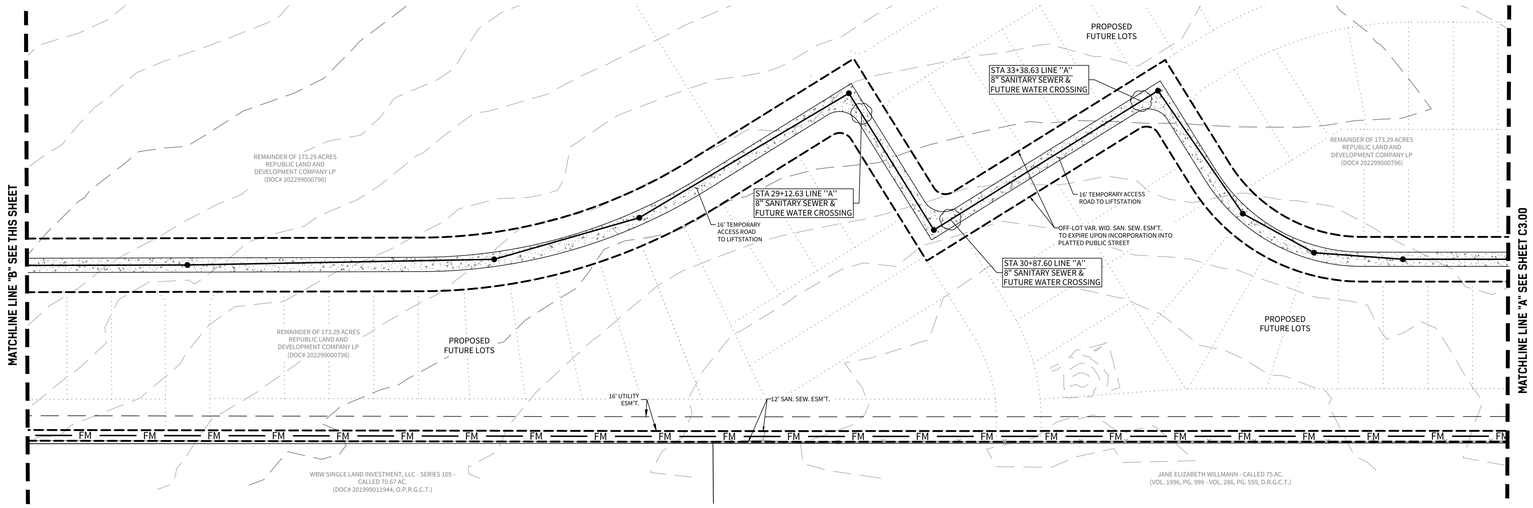
LOCATION MAP
N.T.S

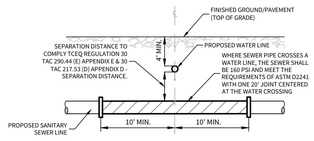
LEGEND

EXISTING SANITARY SEWER	EX.8"SS
PROPOSED SANITARY SEWER	8"SS
EXISTING SANITARY SEWER MANHOLE	
PROPOSED SANITARY SEWER MANHOLE	
PROPOSED WATER MAIN	8"W
PROPOSED STANDARD FIRE HYDRANT	
PROPOSED STANDARD GATE VALVE	
PROPOSED LIGHT POLE	
UTILITY ESM'T.	UTILITY ESMT.
EXISTING WATER MAIN	EX. 8"W
EXISTING OVERHEAD ELECTRIC	OHE
PROPOSED OVERHEAD ELECTRIC	
PROPOSED TRANSFORMER	
PROPOSED SECTIONALIZING BOX	
PROPOSED SECONDARY PEDESTAL	
EXISTING POWER POLE	

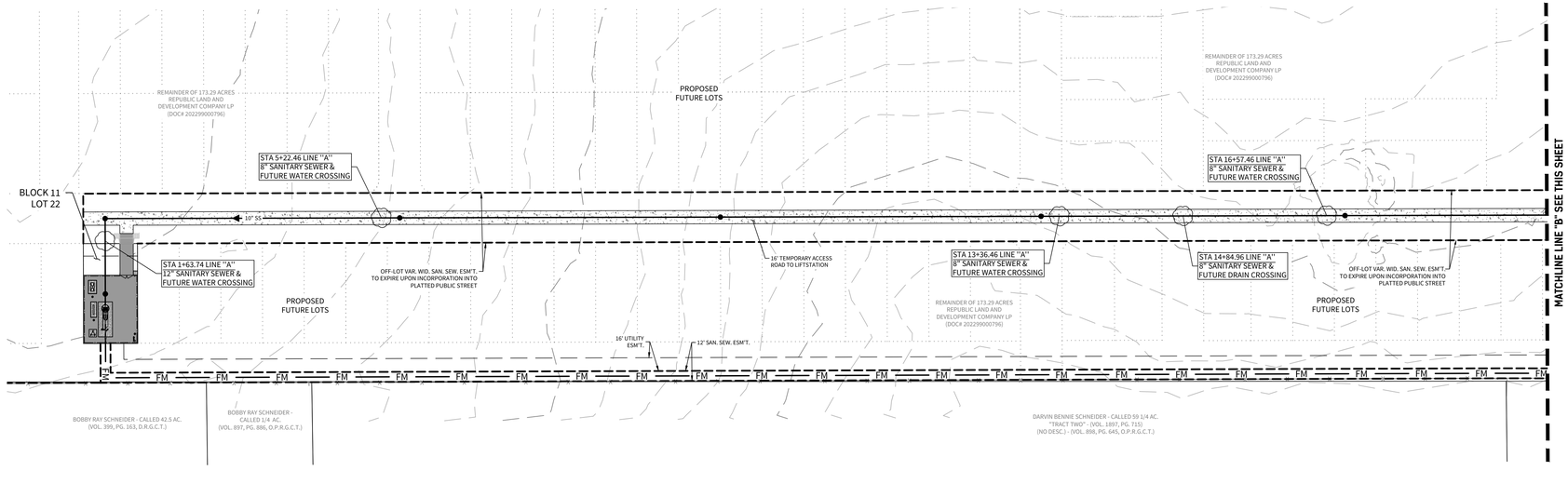
SCALE: 1"=80'

0 80 160





TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.



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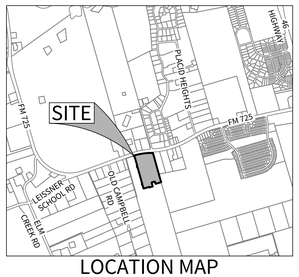
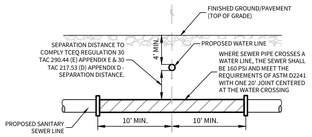


LOCATION MAP
N.T.S



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

LEGEND

- PROPOSED SEWER LINE — XXX LF XX" SS
- EXISTING SEWER LINE — EX. XXX LF XX" SS -
- PROPOSED WATER LINE — xx" W
- PROPOSED MANHOLE
- EXISTING MANHOLE

NOTES:

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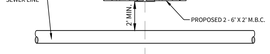
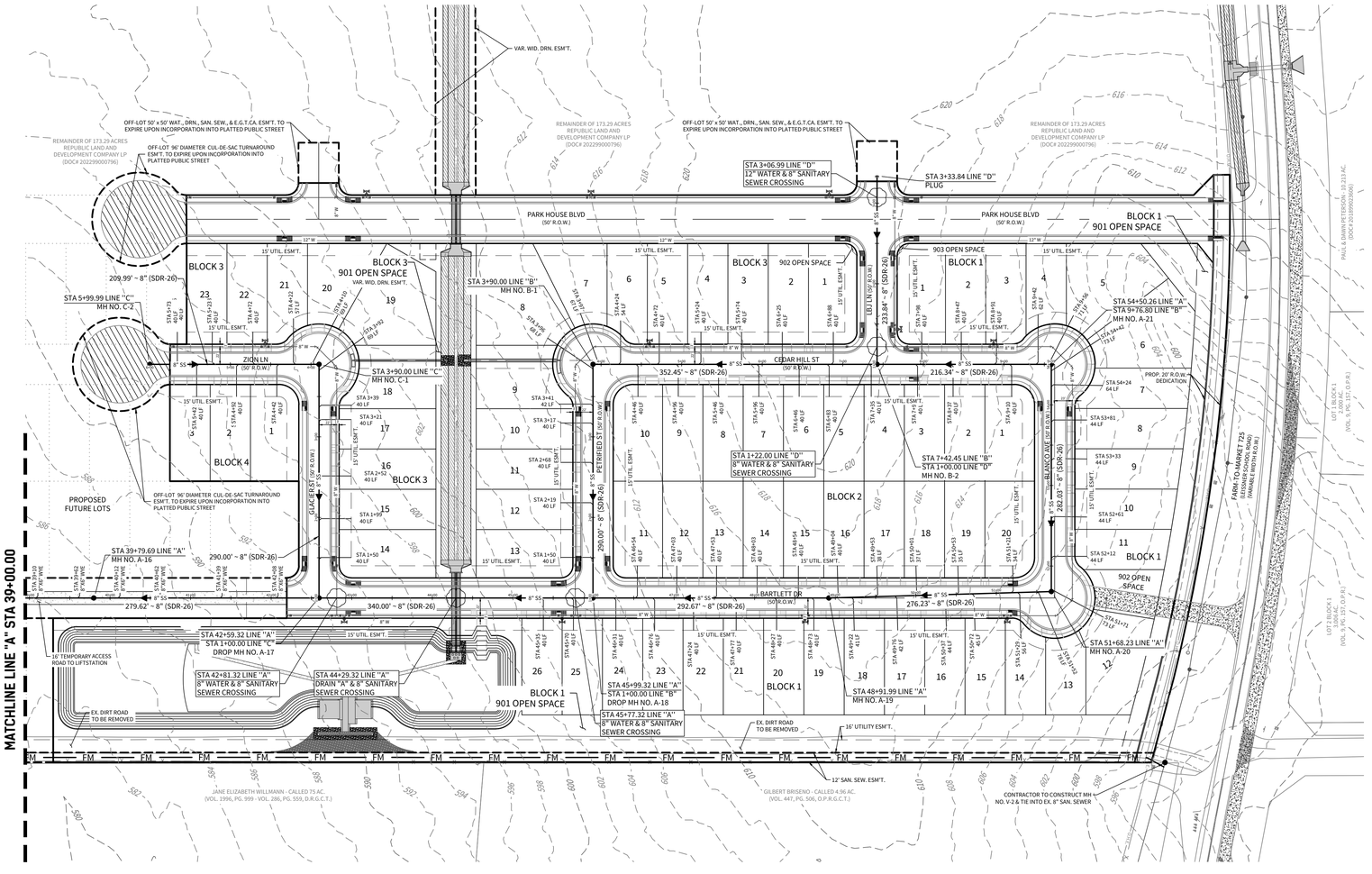


SANITARY SEWER/ DRAIN "A" CROSSINGS DETAIL
N.T.S.



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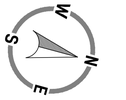

SCALE: 1"=80'

0 80 160

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PARK HOUSE UNIT 1

OVERALL SANITARY SEWER PLAN

DATE
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PROJECT NO.
04154-000

DRAWN BY
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CHECKED BY
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REVISIONS
1 2 3 4 5 6 7 8

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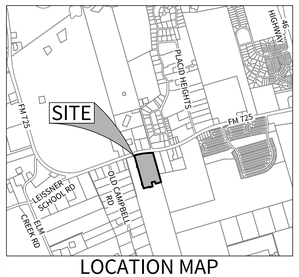

LOCATION MAP
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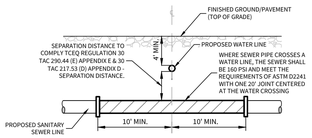

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

LEGEND

PROPOSED SEWER LINE	XXX LF XX" SS
EXISTING SEWER LINE	EX. XXX LF XX" SS
PROPOSED WATER LINE	XX" W
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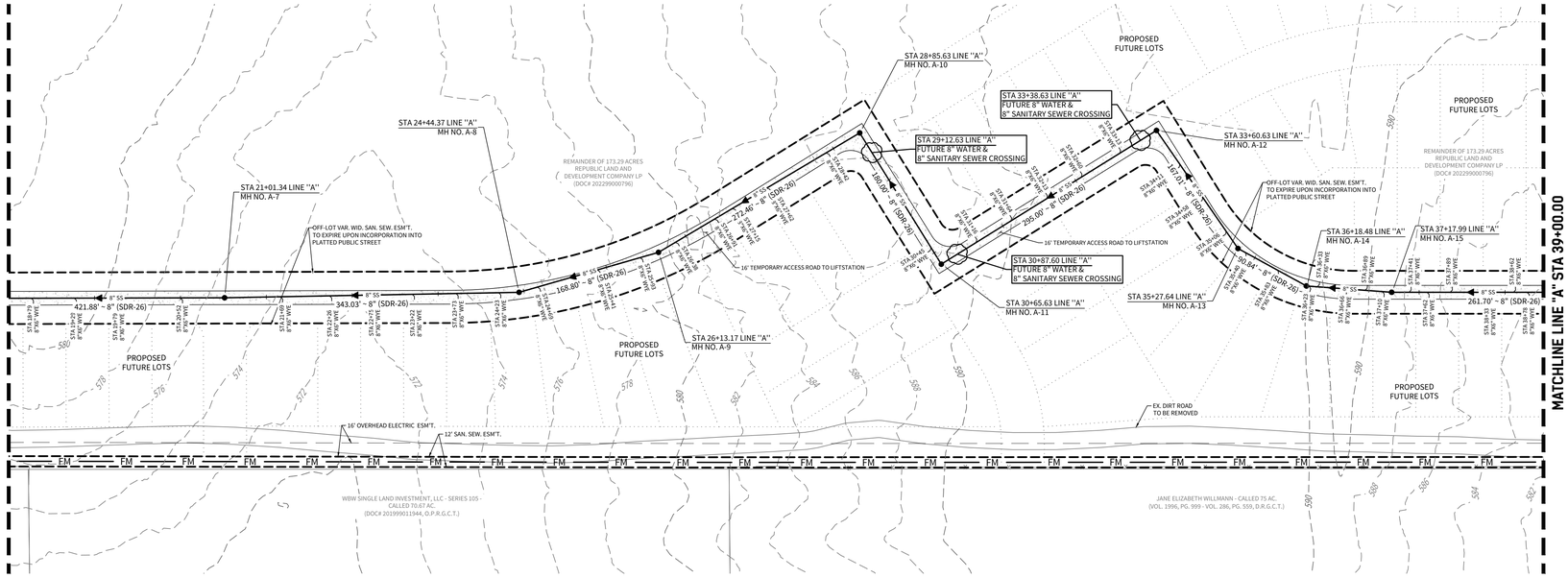

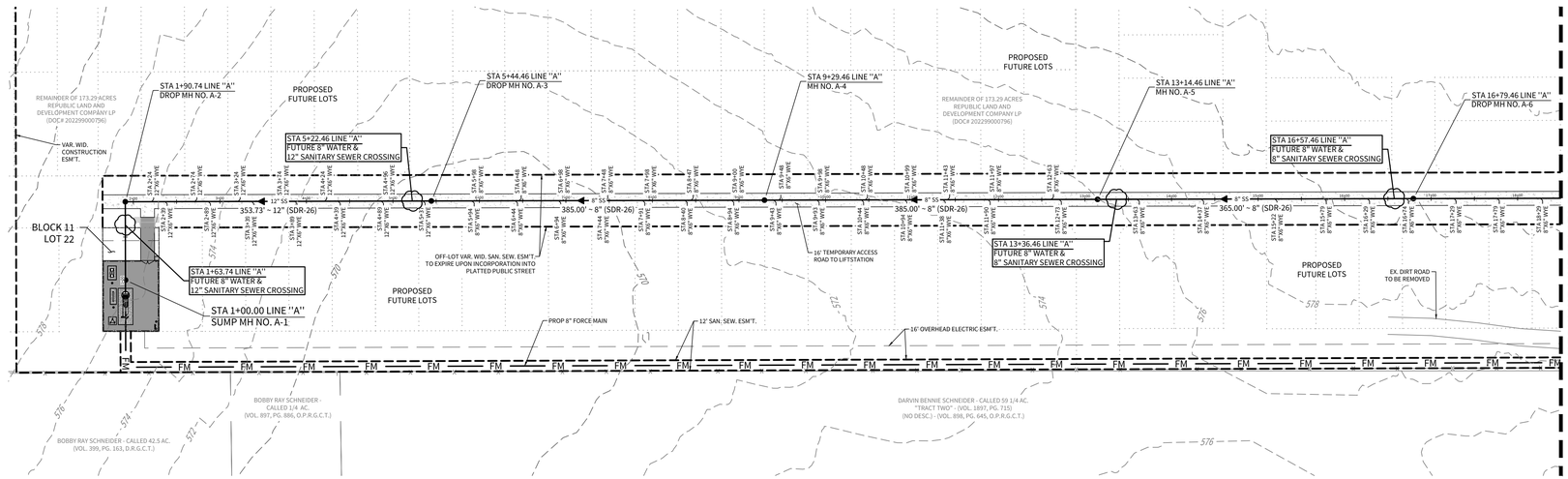

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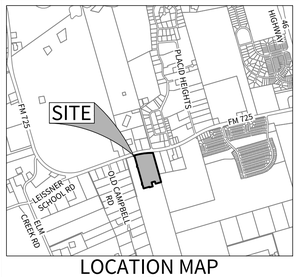


LOCATION MAP
N.T.S

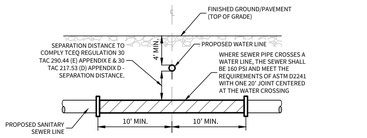
LEGEND

PROPERTY LINE

PROPOSED SEWER LINE — 8" SS

PROPOSED MANHOLE

PROPOSED VERTICAL STACK



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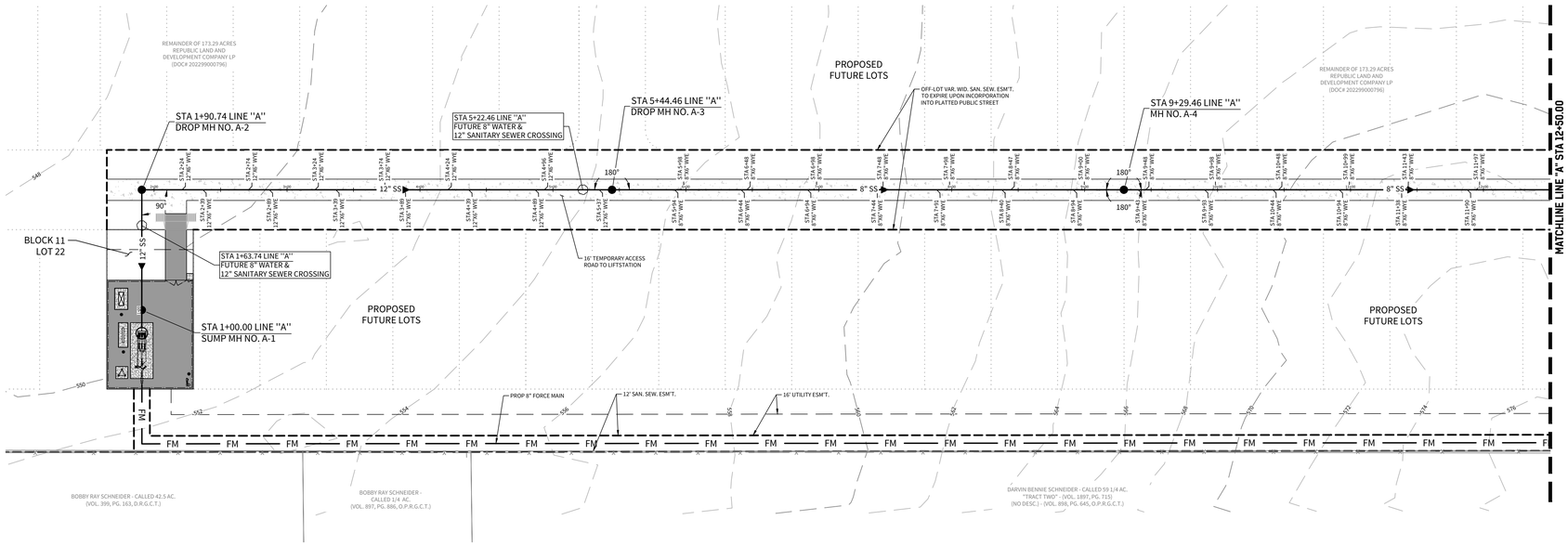
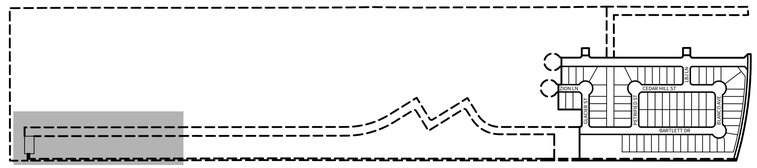
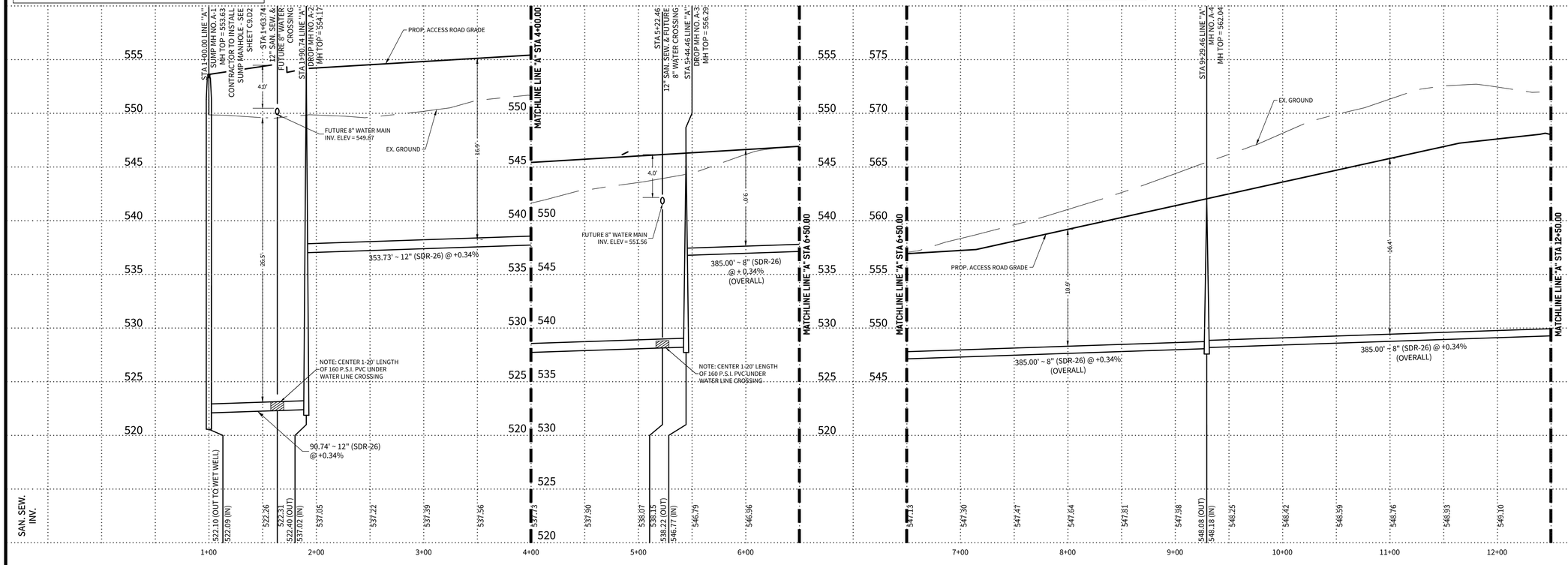


LINE "A"

STA. 1+00.00 TO STA. 12+50.00



SITE MAP
NOT TO SCALE
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE 'A'

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C4.02

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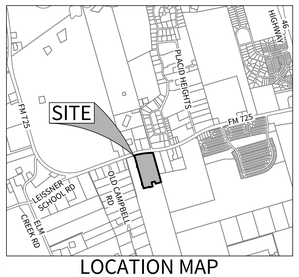


LOCATION MAP
N.T.S

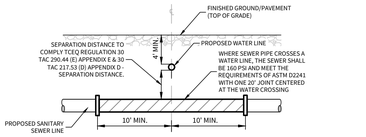
LEGEND

PROPERTY LINE

PROPOSED SEWER LINE — 8" SS

PROPOSED MANHOLE

PROPOSED VERTICAL STACK



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

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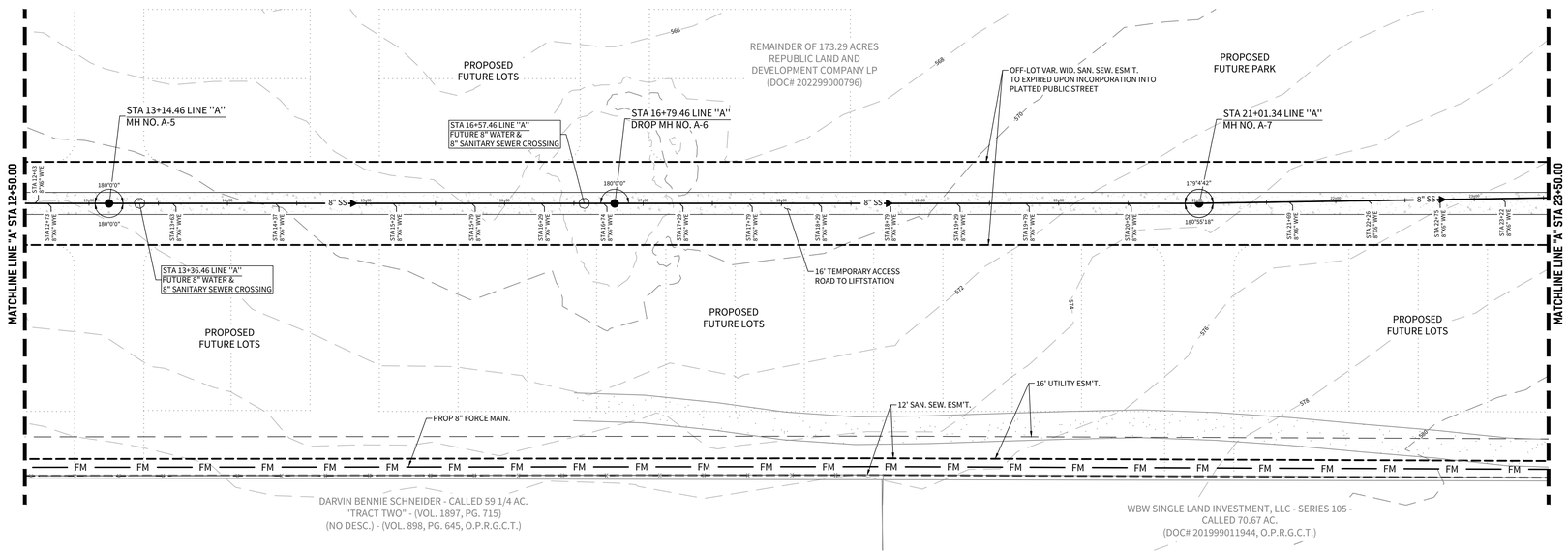
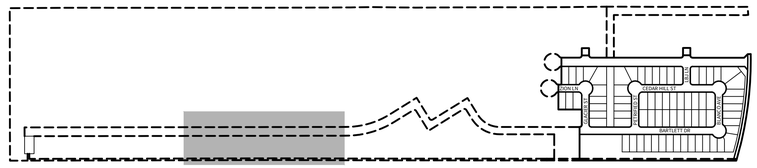
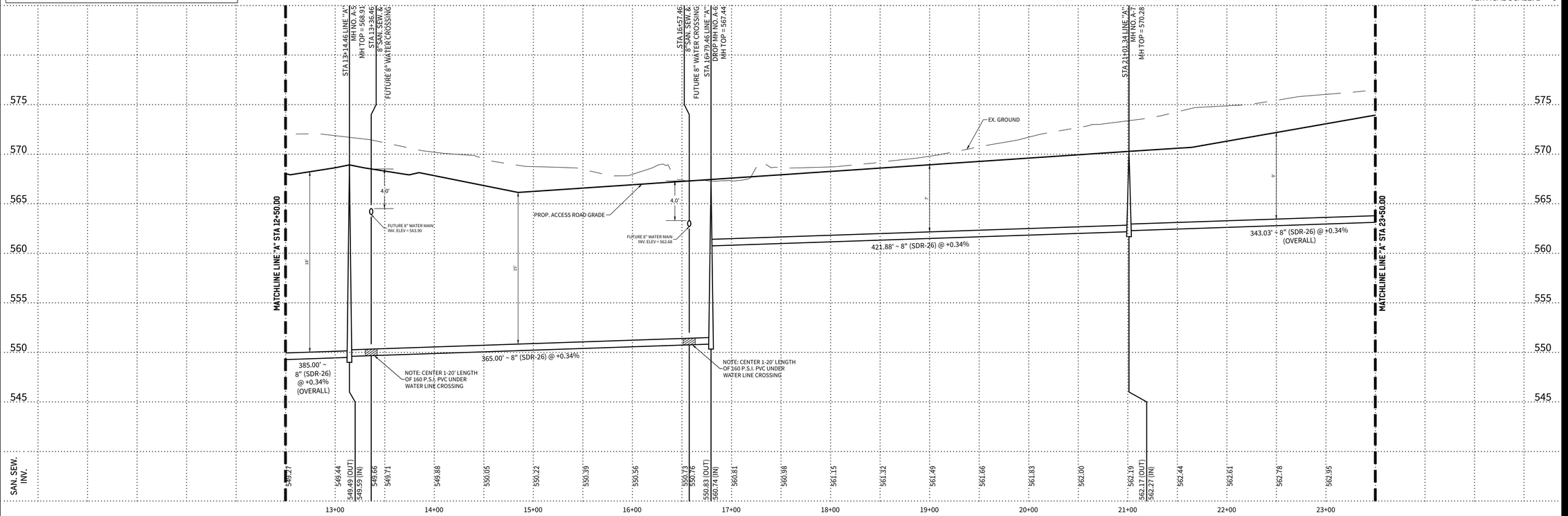


LINE "A"

STA. 12+50.00 TO STA. 23+50.00



SITE MAP
NOT TO SCALE
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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PARK HOUSE
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE 'A'

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

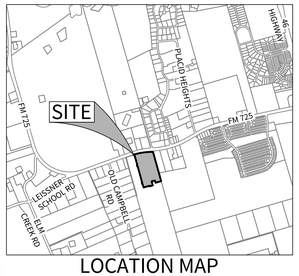
REVISIONS
1.
2.
3.
4.
5.
6.
7.
8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C4.03

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP
N.T.S

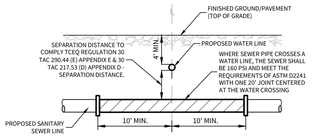
LEGEND

PROPERTY LINE

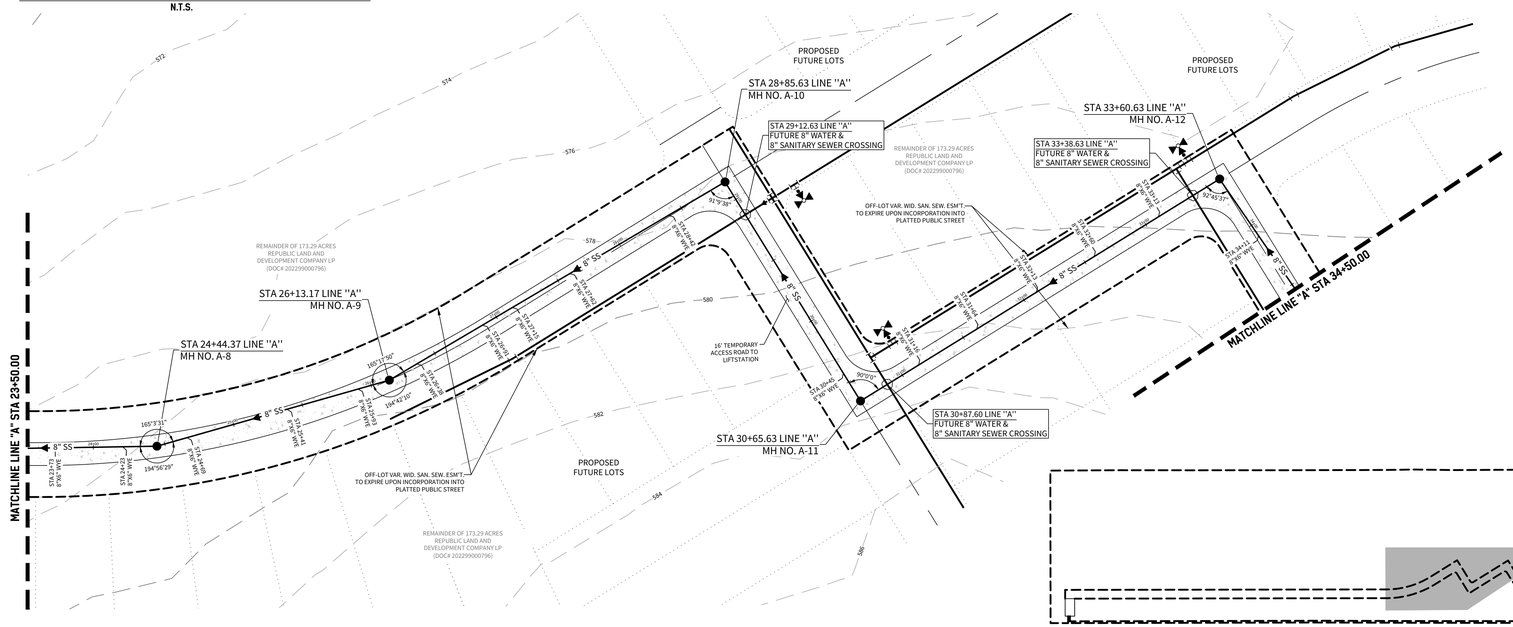
PROPOSED SEWER LINE — 8" SS

PROPOSED MANHOLE

PROPOSED VERTICAL STACK

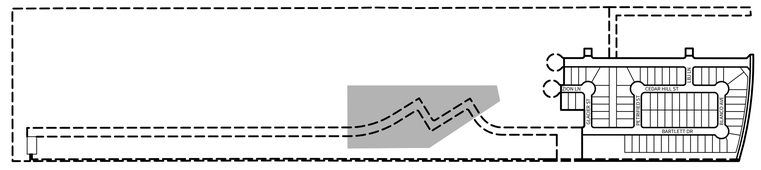


TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

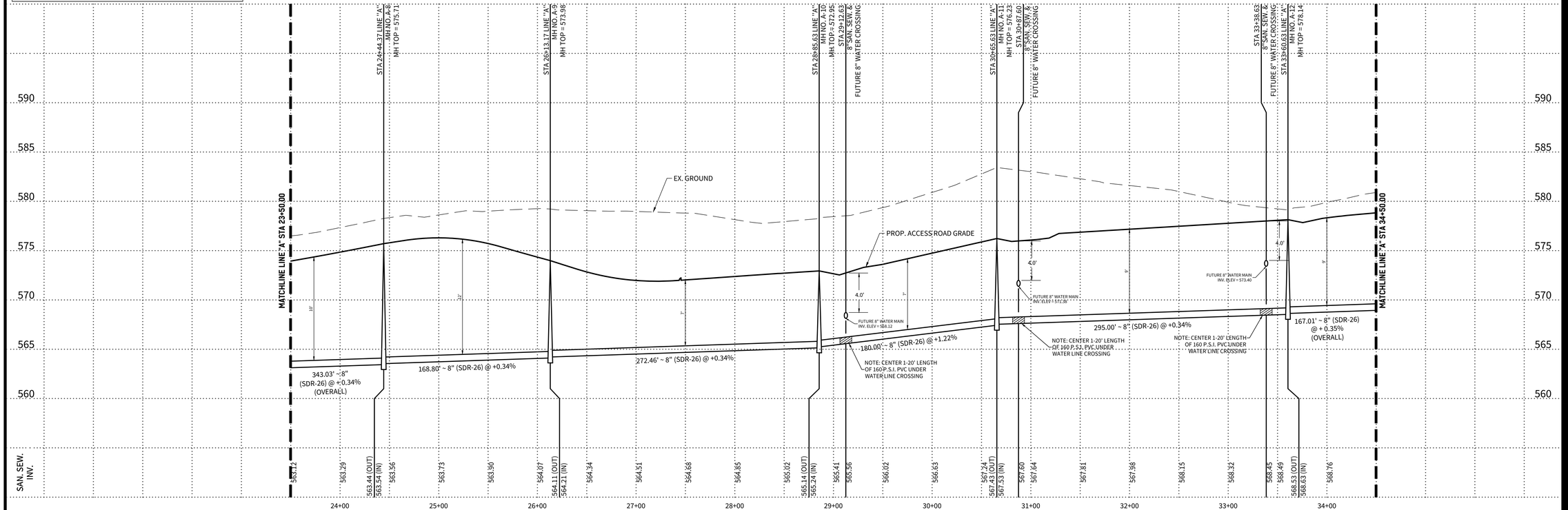


LINE "A"

STA. 23+50.00 TO STA. 34+50.00



SITE MAP
NOT TO SCALE



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PARK HOUSE
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE 'A'

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C4.04

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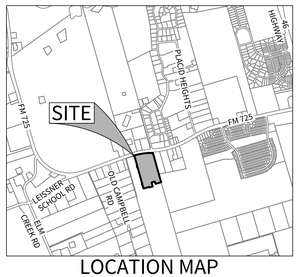
E:\04154-000\2-ENG\Plans\Civil\SANITARY SEWER\PLAN & PROFILE - LINE 'A' Aug 2025.dwg 8/29/2025 9:31am jgonzales



LOCATION MAP
N.T.S

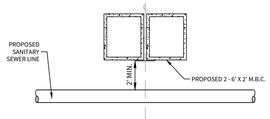
LEGEND

PROPERTY LINE

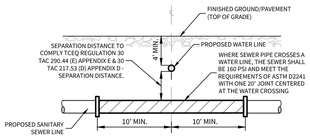
PROPOSED SEWER LINE — 8" SS

PROPOSED MANHOLE

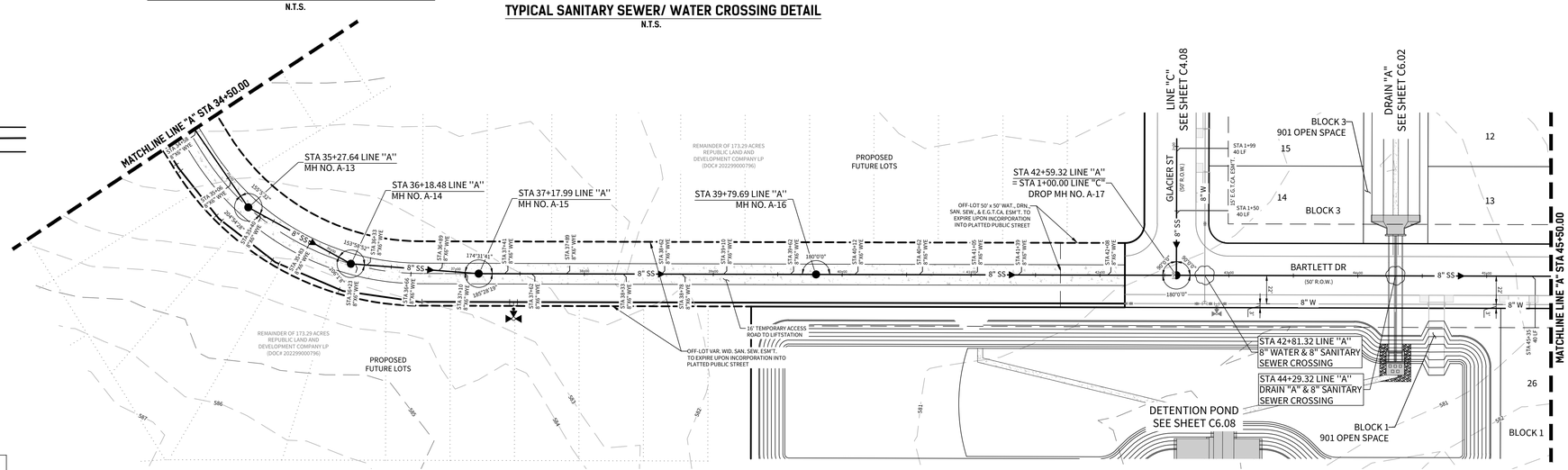
PROPOSED VERTICAL STACK

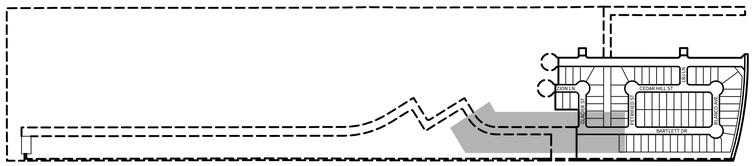


SANITARY SEWER/ DRAIN "A" CROSSINGS DETAIL
N.T.S.



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

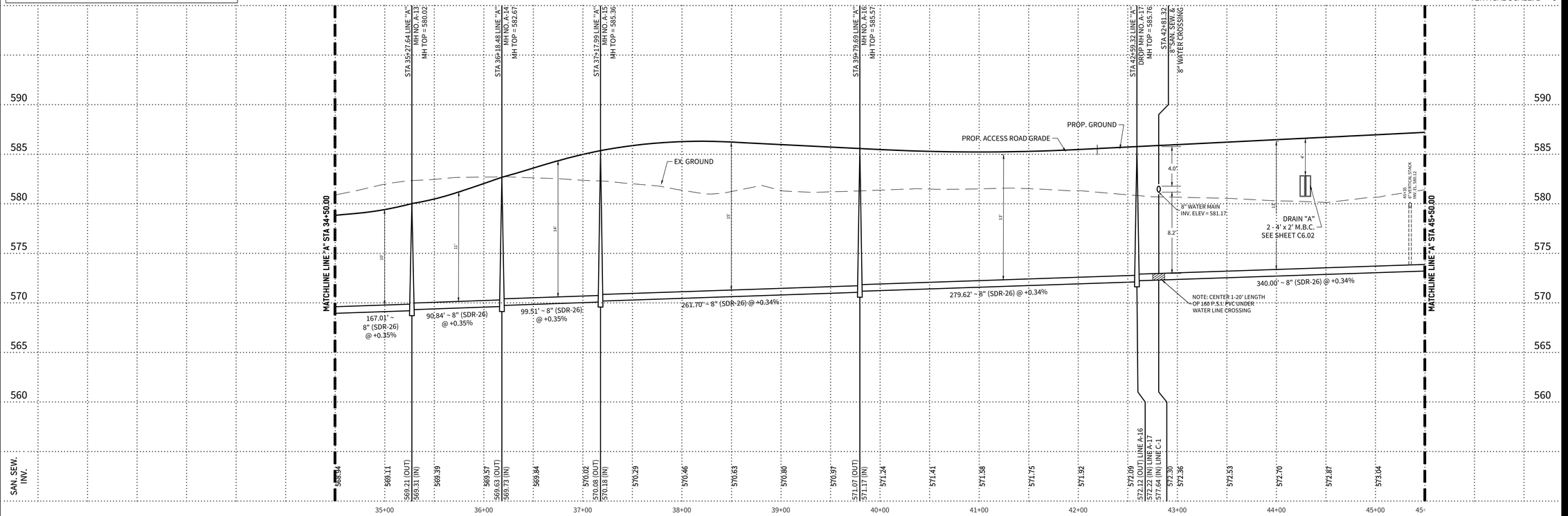




LINE "A"

STA. 34+50.00 TO STA. 45+50.00

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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PARK HOUSE UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE 'A'

DATE
08/29/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

CUDE ENGINEERS
TBPELS No. 10048500

C4.05

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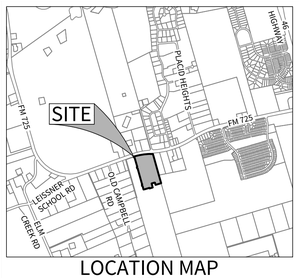


LOCATION MAP

N.T.S

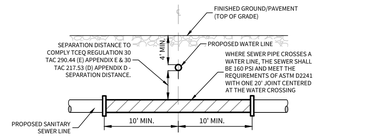
LEGEND

PROPERTY LINE

PROPOSED SEWER LINE — 8" SS

PROPOSED MANHOLE

PROPOSED VERTICAL STACK



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

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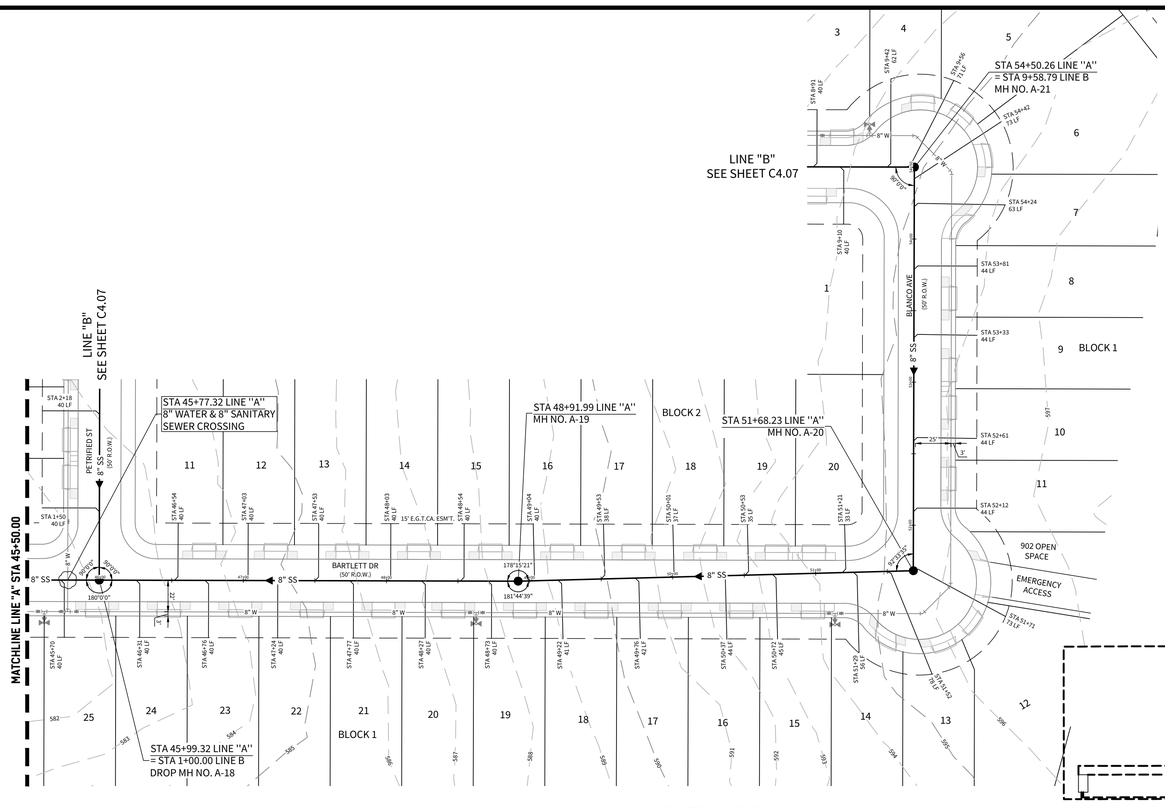
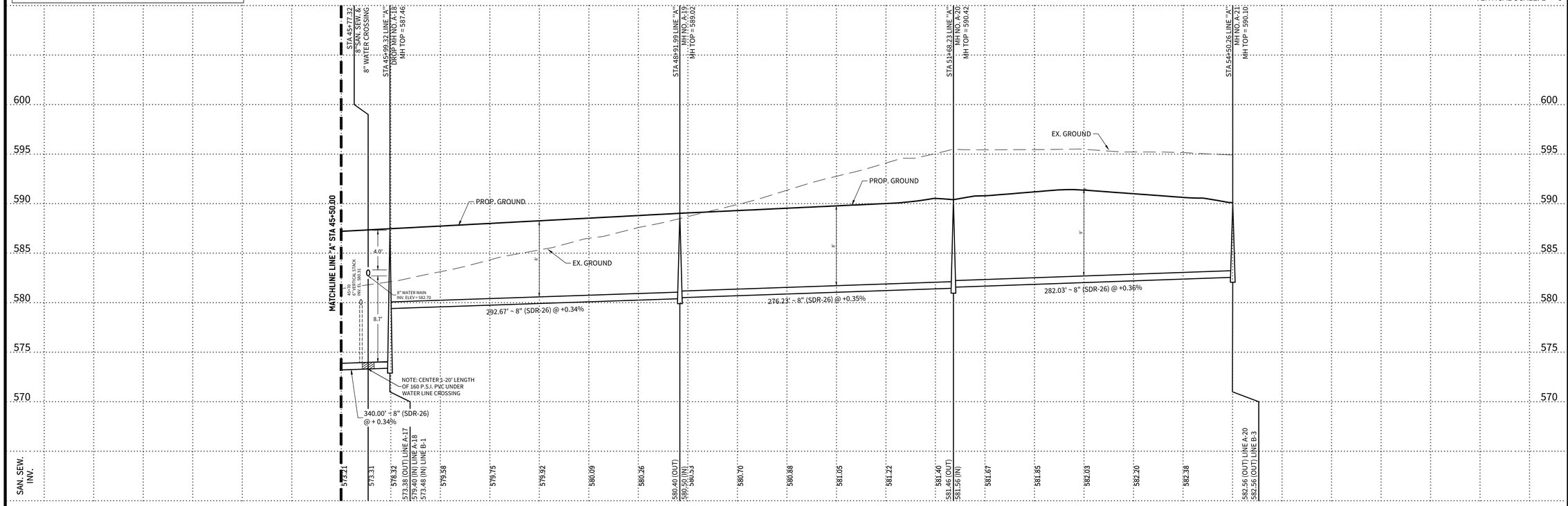
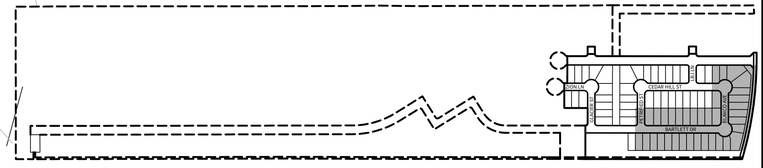


LINE "A"

STA. 45+50.00 TO END





SITE MAP

NOT TO SCALE

HORIZONTAL SCALE: 1" = 50'

VERTICAL SCALE: 1" = 5'

CUDEENGINEERS.COM

CUDE ENGINEERS

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San Marcos, Texas 78666
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PARK HOUSE UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE 'A'

DATE 08/28/2025

PROJECT NO. 04154-000

DRAWN BY SG/JVA

CHECKED BY JL/AC

REVISIONS 1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C4.06

E:\04154-000\2-ENG\4-Plans\CAD\SANITARY SEWER\PLAN & PROFILE - LINE 'A'.dwg 2025/08/28 11:03am swilshusen

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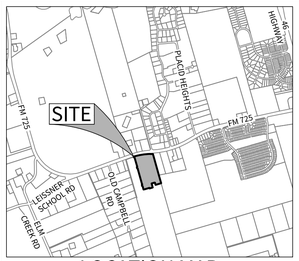


LOCATION MAP
N.T.S

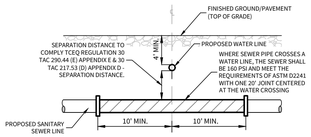
LEGEND

PROPERTY LINE

PROPOSED SEWER LINE — 8" SS

PROPOSED MANHOLE

PROPOSED VERTICAL STACK



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

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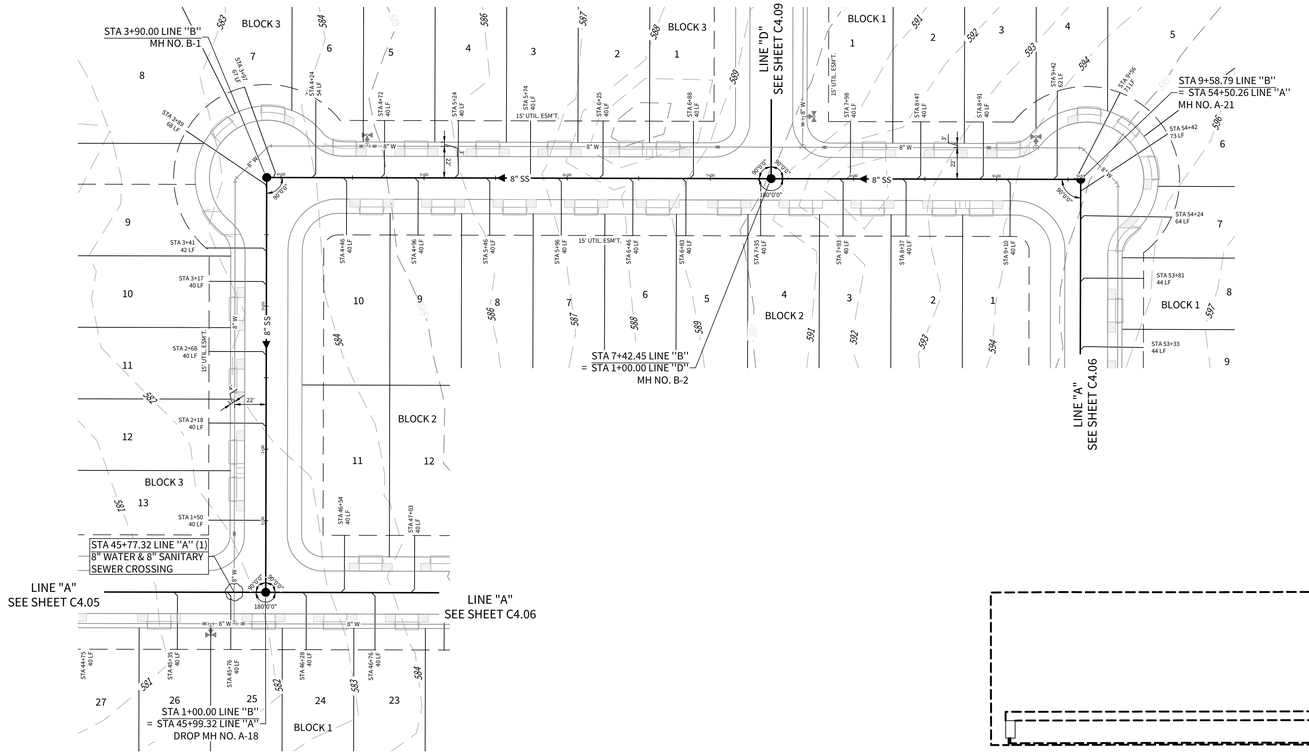
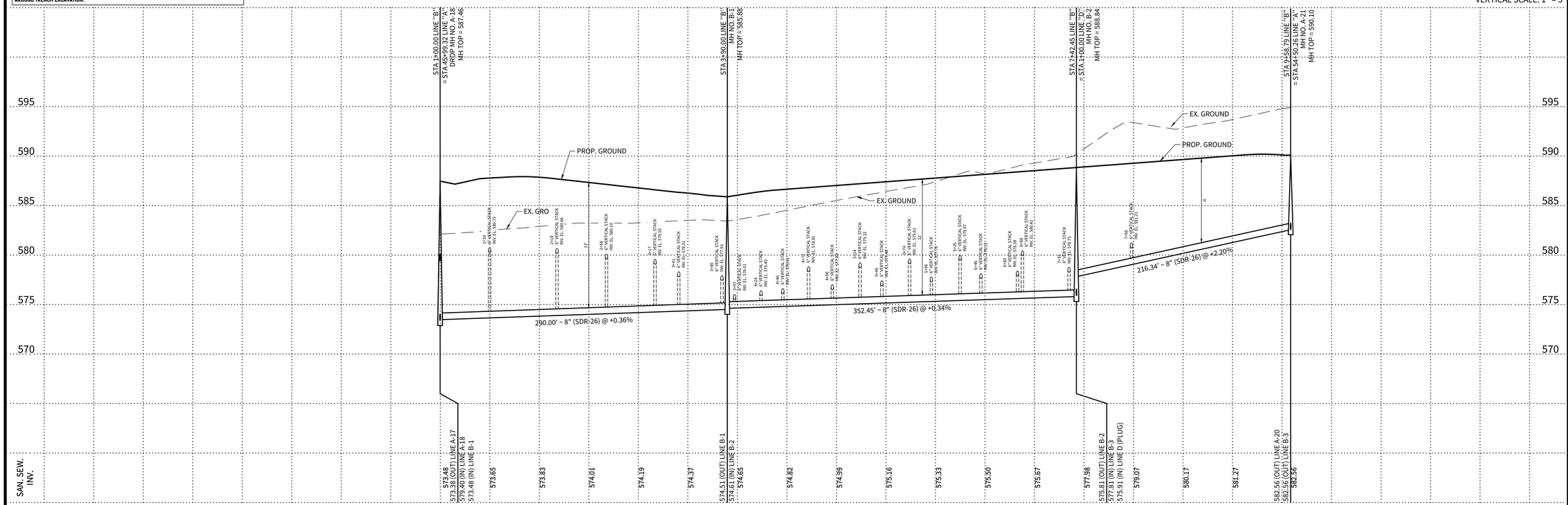


SITE MAP
NOT TO SCALE

LINE "B"

STA. 1+00.00 TO END

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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PARK HOUSE
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE 'B'

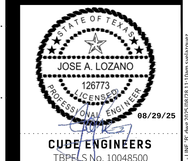
DATE
08/28/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.



CUDE ENGINEERS
TBPELS No. 10048500

C4.07

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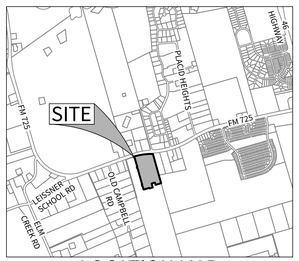


LOCATION MAP
N.T.S

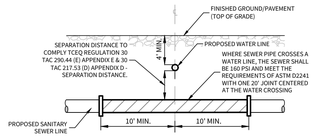
LEGEND

PROPERTY LINE

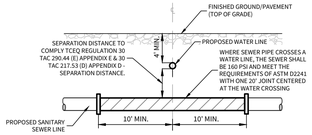
PROPOSED SEWER LINE — 8" SS

PROPOSED MANHOLE

PROPOSED VERTICAL STACK



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

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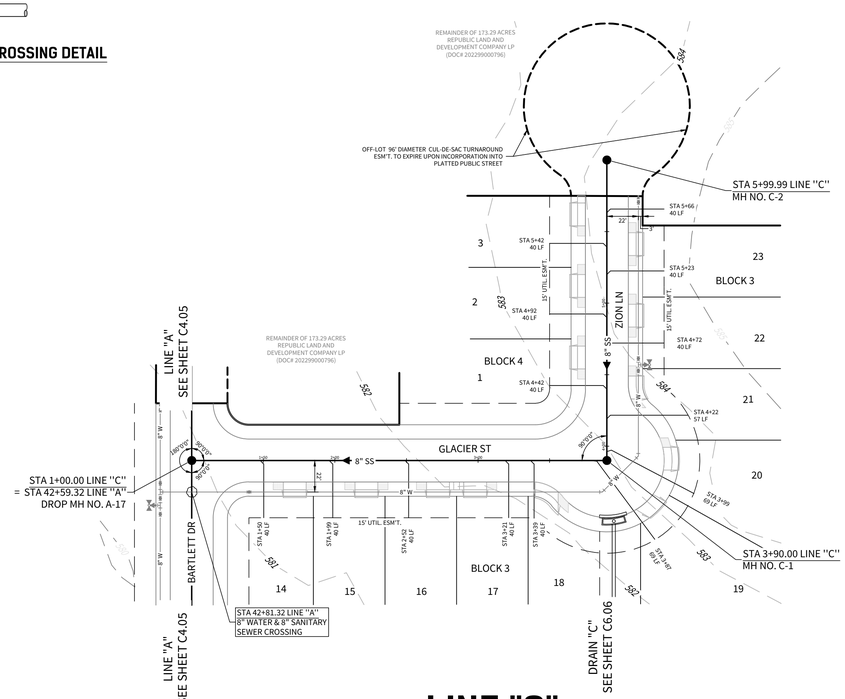
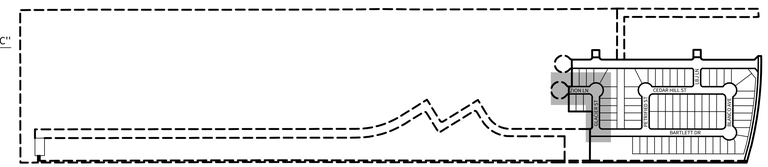


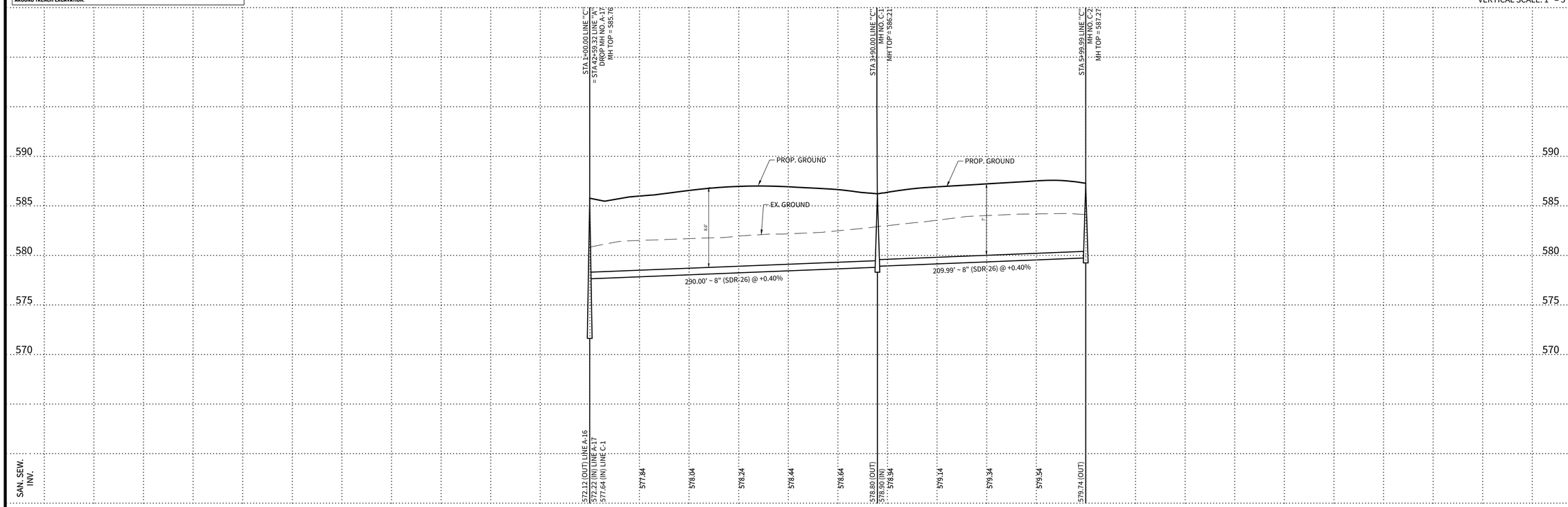
LINE "C"

STA. 1+00.00 TO END



SITE MAP
NOT TO SCALE

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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PARK HOUSE UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE 'C'

DATE
08/28/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

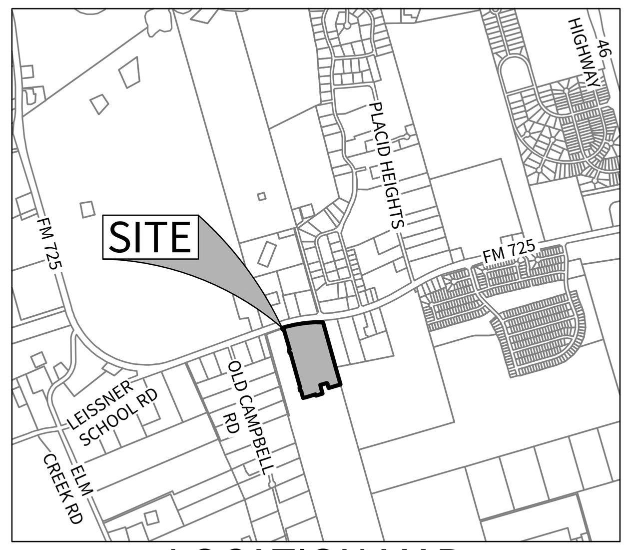
REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C4.08

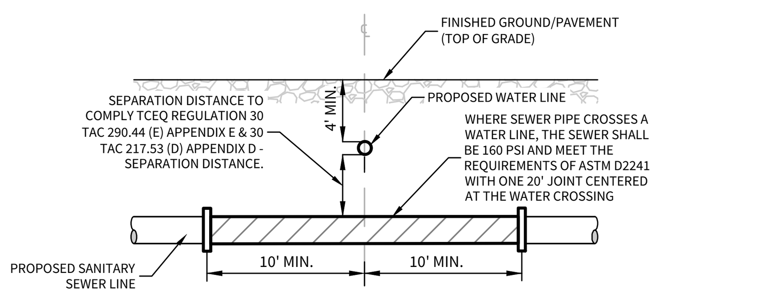
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP
N.T.S

LEGEND

PROPERTY LINE	
PROPOSED SEWER LINE	8" SS
PROPOSED MANHOLE	
PROPOSED VERTICAL STACK	



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

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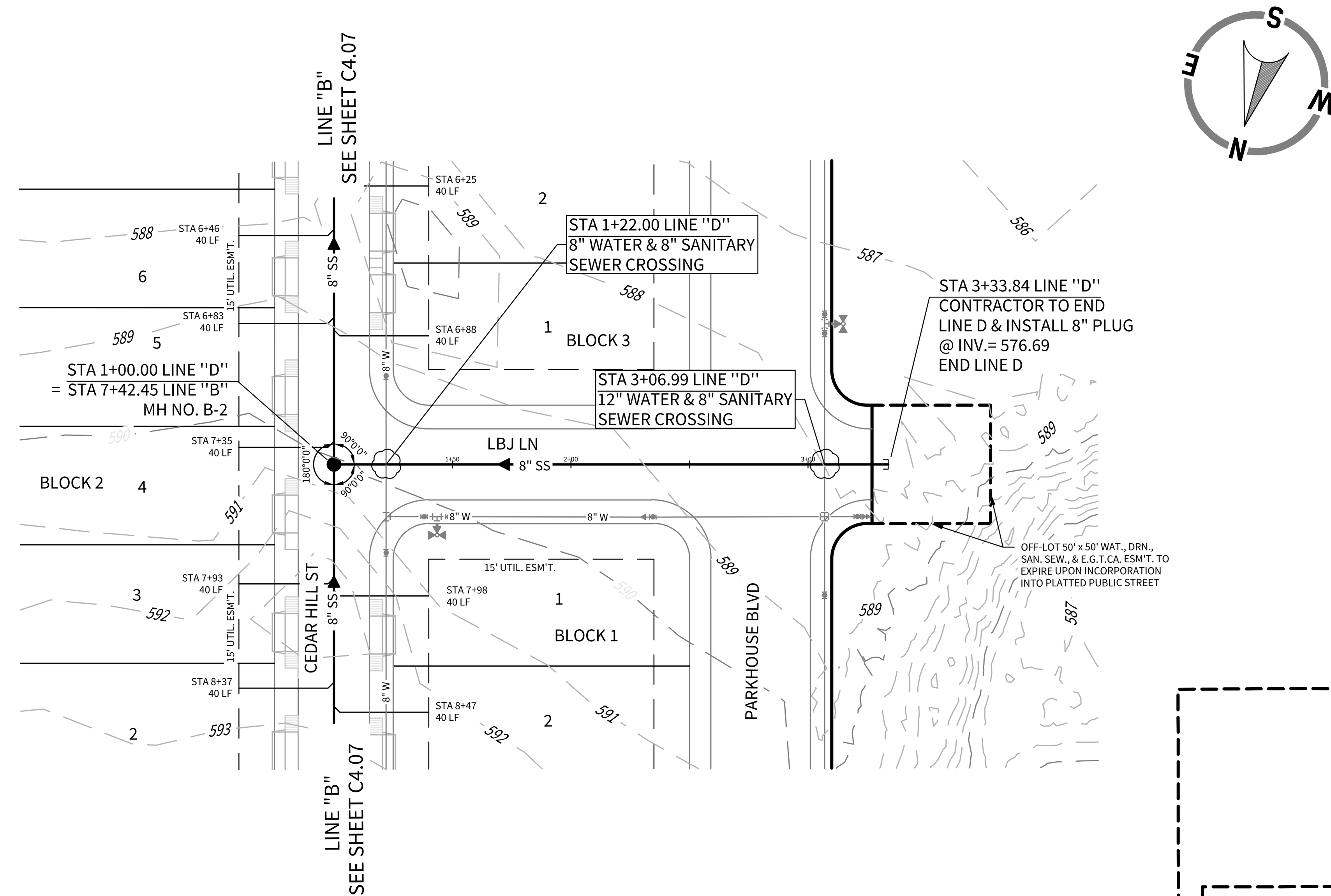
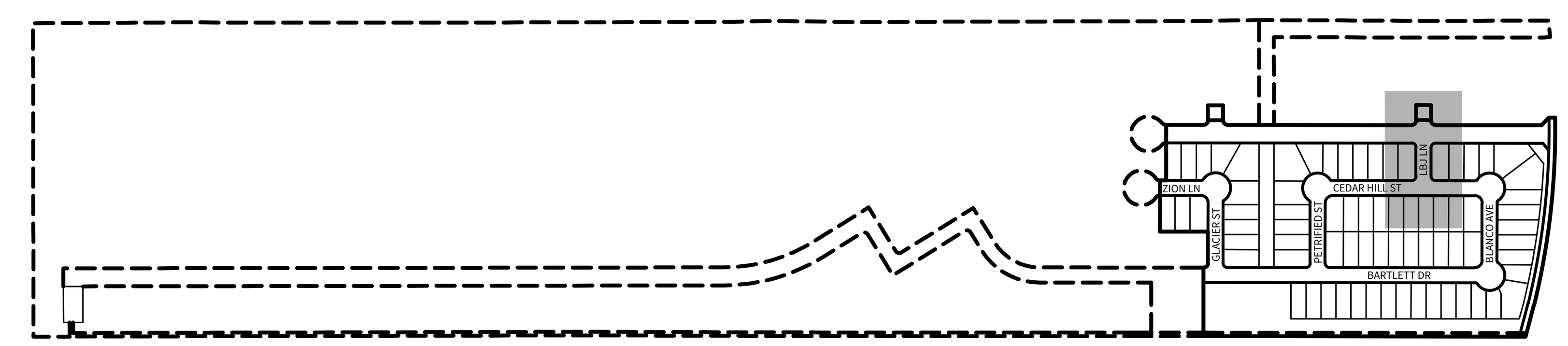


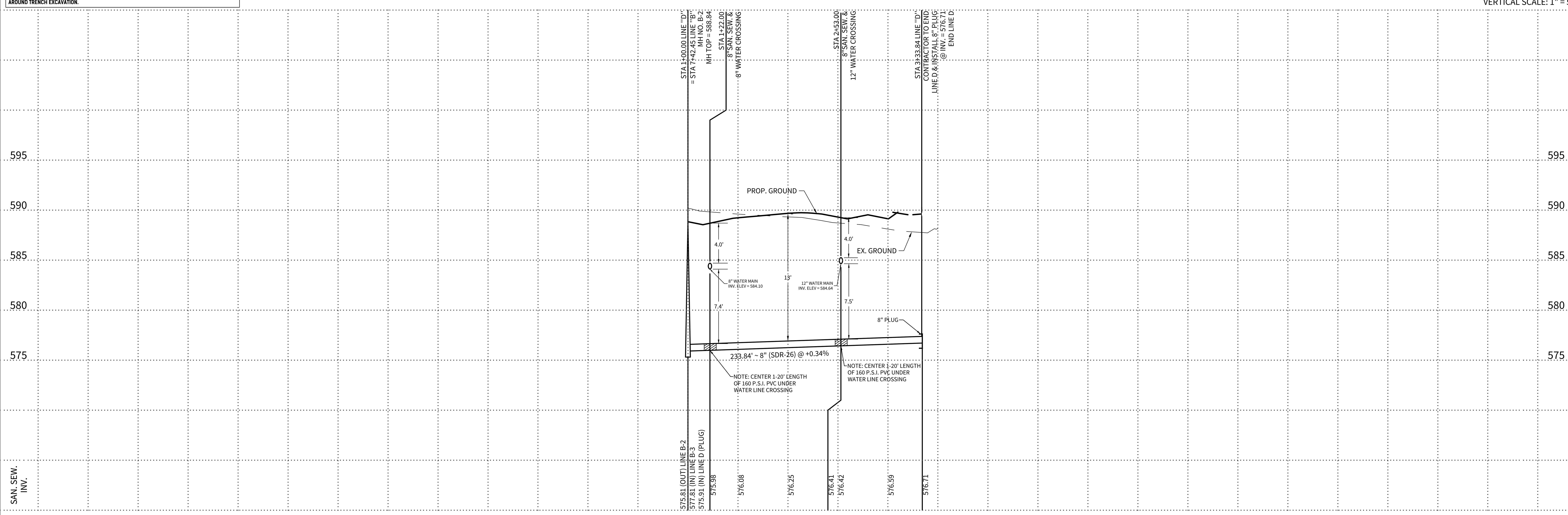


SITE MAP
NOT TO SCALE

LINE "D"

STA. 1+00.00 TO END

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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PARK HOUSE UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE 'D'

DATE	08/28/2025
PROJECT NO.	04154-000
DRAWN BY	SG/JVA
CHECKED BY	JL/AC

REVISIONS
1.
2.
3.
4.
5.
6.
7.
8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C4.09

R:\04154\001\2-DWG\4-Plans\C4.09 SANITARY SEWER PLAN & PROFILE - LINE 'D'.dwg 2025/08/28 11:14am svelazquez

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GENERAL NOTES

1. All materials and construction procedures within the scope of this contract shall be approved by the City of Seguin and comply with the Plans, Specifications, General Conditions and with the following as applicable:

A. Current Texas Commission on Environmental Quality (TCEQ) "Design Criteria for Domestic Wastewater System", Texas Administrative Code (TAC) Title 30 Part 1 Chapter 217 and "Public Drinking Water", TAC Title 30 Part 1 Chapter 290.

B. Current TXDOT "Standard Specifications for Construction of Highways, Streets and Drainage".

C. Current "City of Seguin Design Standards".

2. The Contractor shall obtain the City of Seguin Design Standards from the City of Seguin website, https://www.seguintexas.gov/departments/public_works/design_standards.php. Unless otherwise noted within the design plans.

3. The Contractor is to make arrangements with the City of Seguin Public Works at 830-401-2421, on notification procedures that will be used to notify affected home residents and/or property owners 48 hours prior to beginning any work.

4. Location and depth of existing utilities and service laterals shown on the plans are understood to be approximate. Actual locations and depths must be field verified by the Contractor at least 1 week prior to construction. It shall be the Contractor's responsibility to locate utility service lines as required for construction and to protect them during construction at no cost to the City of Seguin.

5. The Contractor shall verify the exact location of underground utilities and drainage structures at least 1-2 weeks prior to construction whether shown on plans or not. Please allow up to 7 business days for locates requesting pipe location markers on City of Seguin facilities. The following contact information are supplied for verification purposes:

City of Seguin Water/Wastewater Utilities Department 830-401-2404

Texas State Wide One Call Locator 1-800-545-6005 or 811

7. The Contractor shall be responsible for restoring existing fences, curbs, streets, driveways, sidewalks, landscaping and structures to its original or better condition if damages are made as a result of the project's construction.

8. All work in Texas Department of Transportation (TxDOT) and/or Guadalupe County right-of-way shall be done in accordance with respective construction specifications and permit requirements.

9. The Contractor shall comply with City of Seguin or other governing municipality's tree ordinances when excavating near trees.

10. The Contractor shall not place any waste materials in the 100-year Flood Plain without first obtaining an approved Flood Plain Permit.

11. Holiday Work: Contractors will not be allowed to perform CIty of Seguin work on City of Seguin recognized holidays.

Weekend Work: Contractors are required to notify the City of Seguin Project Inspector 48 hours in advance to request weekend work. Any and all City of Seguin utility work installed without holiday/weekend approval will be subject to be uncovered for proper inspection.

12. Compaction note (Item 804): The contractor shall be responsible for meeting the compaction requirements on all trench backfill and for paying for the tests performed by a third party. Compaction tests will be done at one location point randomly selected, or as indicated by the City of Seguin Inspector and/or the test administrator, per each 12-inch loose lift per 400 linear feet at a minimum. This project will not be accepted and finalized by SAWS without this requirement being met and verified by providing all necessary documented test results.

SEWER NOTES

1. The Contractor is responsible for ensuring that no Sanitary Sewer Overflow (SSO) occurs as a result of their work. All contractor personnel responsible for SSO prevention and control shall be trained on proper response. Should an SSO occur, the contractor shall:

A. Identify the source of the SSO and notify City of Seguin Water/Wastewater Utilities Department immediately at 830-401-2421. Provide the address of the spill and an estimated volume or flow.

B. Attempt to eliminate the source of the SSO.

C. Contain sewage from the SSO to the extent of preventing a possible contamination of waterways.

D. Clean up spill site (return contained sewage to the collection system if possible) and properly dispose of contaminated soil/materials.

E. Clean the affected sewer mains and remove any debris.

F. Meet all post-SSO requirements as per the EPA Consent Decree, including line cleaning and televising the affected sewer mains (at the City of Seguins direction) within 24 hours.

-Should the Contractor fail to address an SSO immediately and to the City of Seguin satisfaction, they will be responsible for all costs incurred by the City of Seguin including any fines from EPA, TCEQ and/or any other Federal, State or Local Agencies. -No separate measurement or payment shall be made for this work. All work shall be done according to guidelines set by the TCEQ and the Seguin.

2. If bypass pumping is required, the Contractor shall perform such work in accordance with the City of Seguin Design Standards.

3. Prior to tie-ins, any shutdowns of existing force mains of any size must be coordinated with the City of Seguin Water/Wastewater Utilities Department at 830-401-2404 at least one week in advance of the shutdown. The Contractor must also provide a sequence of work as related to the tie-ins; this is at no additional cost to the City of Seguin Water/Wastewater Utilities Department or the project and it is the responsibility of the Contractor to sequence the work accordingly.

4. Sewer pipe where water line crosses shall be 160 psi and meet the requirements of ASTM D2241, TAC 217.53 and TCEQ 290.44(e)(4)(B). Contractor shall center a 20' joint of 160 psi pressure rated PVC at the proposed water crossing.

5. ELEVATIONS POSTED FOR TOP OF MANHOLES ARE FOR REFERENCE ONLY: It shall be the responsibility of the Contractor to make allowances and adjustments for top of manholes to match the finished grade of the project's improvements. (NSPI)

6. Spills, Overflows, or Discharges of Wastewater: All spills, overflows, or discharges of wastewater, recycled water, petroleum products, or chemicals must be reported immediately to the City of Seguin Inspector assigned to the Construction Plans approval. This requirement applies to every spill, overflow, or discharge regardless of size.

7. Manhole and all pipe testing (including the TV inspection) must be performed and passed prior to Final Field Acceptance by the City of Seguin Capital Projects and Engineering Department, as per the City of Seguin Design Standards.

8. All PVC pipe over 14 feet of cover shall be extra strength with minimum pipe stiffness of 115 psi.

9. All excavated material shall be placed on the upgradient side of the sewer trench thus allowing the trench to intercept any silt contaminated runoff.

10. All sanitary sewer pipe shall be p.v.c. that meets astm specification d-3034, sdr-26 unless otherwise noted.

11. All laterals to be installed @ min. 2.0% slope. unless otherwise noted.

12. Laterals to be built to front utility easement line or sanitary sewer easement line.

13. The locations and depths of all existing utilities, including service laterals and drainage structures shown on the plans are approximate only. the contractor shall verify the exact location and depths of underground utilities at least 48 hours prior to construction whether shown on plans or not, and to protect the same during construction.

City of Seguin Utilities	830-401-2404
Springs Hill Water Supply Corp.	830-379-7683
Texas State Wide One Call Locator	1-800-545-6005
Guadalupe Valley Electric Cooperative	"
Guadalupe-Blanco River Authority	"
AT&T	"
Time Warner Cable	"
Valero Energy Co.	"

14. Sewer clean out for each lot to be installed at the time of home building.

SUPPLEMENTARY

No extra-payment shall be allowed for work called for on the plans but not included on the bid schedule. This incidental work will be required and shall be included under the pay item to which it relates.

The Developer dedicates the sanitary sewer mains upon completion by the Developer and acceptance by the City of Seguin. The City of Seguin will own and maintain said sanitary sewer mains which are located within this particular subdivision. (As applicable)

All PVC Sewer Pipe with over 14 feet of cover shall be extra strength pipe, Minimum Stiffness of 115 PSI.

WORK COMPLETED BY THE CONTRACTOR WHICH HAS NOT RECEIVED A WORK ORDER OR THE NOTICE TO PROCEED WITH THE SPRINGS HILL WATER SYSTEM CONSTRUCTION INSPECTION DIVISION WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.

The Contractor is responsible to ensure that no overflows of sewage occurs. Should this occur the Contractor shall:

A. Identify the source of the spill and attempt to eliminate any additional spillage. Notify the City of Seguin Water/Wastewater Utilities Department at 830-401-2421.

B. Contain the spill in place and prevent contamination of streams.

C. Clean up the spill and dispose of contaminated materials.

D. Disinfect the area of the spill with a mixture of HTH chlorine and water.

E. Identify and train personnel responsible for spillage prevention and control.

No separate measurement or payment shall be made for this work. All work shall be done in according to guidelines set by the Texas Natural Resource Contamination Commission (TNRCC) and the City of Seguin.

Service Lateral Connections:

A. The exact location and elevation of the service laterals and manholes shall be field verified by the Contractor (NSPI).

B. A minimum of 3 feet of cover is to be maintained over the sanitary sewer laterals or subgrade.

C. All sewer lateral services for future connections as identified on plan and profiles, shall be capped and sealed.

D. The Contractor shall be responsible for disconnecting each existing service line from the existing water main and re-connecting the service to the new service main. The Contractor shall be responsible for maintaining continuous service (NSPI).

E. Laterals shall be constructed to serve all existing houses and vacant lots.

The Contractor shall provide by-pass pumping of sewage around each segment of pipe to be replaced, in accordance with Springs Hill special specification "Sanitary Sewer". Payment for such work will be made under the bid item "Sanitary Sewer (By-Pass Pumping)" as per Springs Hill special specification "Sanitary Sewer".

Prior to tie-ins, any shutdowns of existing force mains of any size must be coordinated with the City of Seguin Utilities (830.401.2404) inspection and/or production groups at least one week or more in advance of the shutdown. The Contractor must also provide a sequence of work as related to the tie-ins; this is at no additional cost to the City of Seguin or the project and it is the responsibility of the Contractor to sequence the work accordingly.

CRITERIA FOR SEWER MAIN CONSTRUCTION IN THE VICINITY OF WATER MAINS

I. For separation distance requirements between sewer mains & water mains, see the 30 TAC §217.53 Pipe Design notes included on this sheet.

II. Corrosion protected mechanical coupling devices of a cast iron or ductile iron material shall be used.

III. Plan & profile must show type of crossing and material to use.

TCEQ – 30 TAC290.44(e)

(e) Location of waterlines. The following rules apply to installations of waterlines, wastewater mains or laterals, and other conveyances/appurtenances identified as potential sources of contamination. Furthermore, all ratings specified shall be defined by ASTM or AWWA standards unless stated otherwise. New mains, service lines, or laterals are those that are installed where no main, service line, or lateral previously existed, or where existing mains, service lines, or laterals are replaced with pipes of different size or material.
(1) When new potable water distribution lines are constructed, they shall be installed no closer than nine feet in all directions to wastewater collection facilities. All separation distances shall be measured from the outside surface of each of the respective pieces.
(2) Potable water distribution lines and wastewater mains or laterals that form parallel utility lines shall be installed in separate trenches.
(3) No physical connection shall be made between a drinking water supply and a sewer line. Any appurtenance shall be designed and constructed so as to prevent any possibility of sewage entering the drinking water system.
(4) Where the nine-foot separation distance cannot be achieved, the following criteria shall apply.
(A) New waterline installation - parallel lines.
(i) Where a new potable waterline parallels an existing, non-pressure or pressure rated wastewater main or lateral and the licensed professional engineer licensed in the State of Texas is able to determine that the existing wastewater main or lateral is not leaking, the new potable waterline shall be located at least two feet above the existing wastewater main or lateral, measured vertically, and at least four feet away, measured horizontally, from the existing wastewater main or lateral. Every effort shall be exerted not to disturb the bedding and backfill of the existing wastewater main or lateral.
(ii) Where a new potable waterline parallels an existing pressure-rated wastewater main or lateral and it cannot be determined by the licensed professional engineer if the existing line is leaking, the existing wastewater main or lateral shall be replaced with at least 150 psi pressure-rated pipe. The new potable waterline shall be located at least two feet above the new wastewater line, measured vertically, and at least four feet away, measured horizontally, from the replaced wastewater main or lateral.
(iii) Where a new potable waterline parallels a new wastewater main, the wastewater main or lateral shall be constructed of at least 150 psi pressure-rated pipe. The new potable waterline shall be located at least two feet above the wastewater main or lateral, measured vertically, and at least four feet away, measured horizontally, from the wastewater main or lateral.
(B) New waterline installation - crossing lines.
(i) Where a new potable waterline crosses above a wastewater main or lateral, the segment of the waterline pipe shall be centered over and must be perpendicular to the wastewater main or lateral such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the centerline of the wastewater main or lateral. When crossing an existing wastewater main or lateral and it is disturbed or shows signs of leaking, the wastewater main or lateral shall be replaced for at least nine feet in both directions (18 feet total) with at least 150 psi pressure-rated pipe embedded in cement stabilized sand (see clause (v) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end.
(I) The potable waterline shall be at least two feet above an existing, non-pressure rated wastewater main or lateral.
(II) The potable waterline shall be at least six inches above an existing, pressure-rated wastewater main or lateral.
(ii) Where a new potable waterline crosses a new, non-pressure rated wastewater main or lateral, the segment of the waterline pipe shall be centered over and shall be perpendicular to the wastewater main or lateral such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the centerline of the wastewater main or lateral. The potable waterline shall be at least two feet above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. The wastewater pipe shall have a minimum pipe stiffness of 115 psi at 5.0% deflection. The wastewater main or lateral shall be embedded in cement stabilized sand (see clause (v) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end. The materials and method of installation shall conform to one of the following options:
(I) Within nine feet horizontally of either side of the waterline, the wastewater pipe and joints shall be constructed with pipe material having a minimum pressure rating of at least 150 psi. An absolute minimum vertical separation distance of two feet shall be provided. The wastewater main or lateral shall be located below the waterline.

Line	Manhole	Manhole Section		Contributing EDU's	Contributing Area (Ac.)	Average Dry Weather Flow (gpd)	Peak Dry Weather Flow(PDFW) (gpd)	Infiltration/Inflow (gpd)	Peak Wet Weather Flow(PWWF) (gpd)	Peak Wet Weather Flow (cfs)	Length of Pipe (ft)	Pipe Slope Invert (ft)		Δ	Slope (%)	Rim Elevation (ft)		Pipe Size I.D. (in)	Velocity @ PWWF Capacity (fps)	100% of Design Q (full flow-min. slope)(cfs)	100% of Design Capacity (full flow-design. Slope) (gpd)	90% of Design Capacity (gpd)	PDWF:Qfull(Not to exceed 90% (gpd)
		From	To									Elev. DS	Elev. US			Elev. DS	Elev. US						
Line A	MH A- 01 to A- 02	STA. 01 + 00.00	STA. 01 + 90.74	602	0.05 Ac	*180,600 gpd*	*541,800 gpd*	*016 gpd*	***541,816 gpd***	*0.84 cfs*	*90.74 '*	522.09 '	522.40 '	0.31	*0.3%*	553.63 '	554.17 '	12 "	*1.067 fps*	*2.09 cfs*	*1,349,542 gpd*	*1,214,588 gpd*	***541,800 gpd***
Line A	MH A- 02 to A- 03	STA. 01 + 90.74	STA. 05 + 44.46	495	1.58 Ac	*148,500 gpd*	*445,500 gpd*	*474 gpd*	***445,974 gpd***	*0.69 cfs*	*353.72 '*	537.02 '	538.22 '	1.2	*0.3%*	554.17 '	556.29 '	12 "	*0.879 fps*	*2.08 cfs*	*1,344,825 gpd*	*1,210,343 gpd*	***445,500 gpd***
Line A	MH A- 03 to A- 04	STA. 05 + 44.46	STA. 09 + 29.46	233	2.98 Ac	*69,900 gpd*	*209,700 gpd*	*893 gpd*	***210,593 gpd***	*0.33 cfs*	*385.00 '*	546.77 '	548.08 '	1.31	*0.3%*	556.29 '	562.04 '	8 "	*0.933 fps*	*0.71 cfs*	*456,808 gpd*	*411,127 gpd*	***209,700 gpd***
Line A	MH A- 04 to A- 05	STA. 09 + 29.46	STA. 13 + 14.46	219	1.39 Ac	*65,700 gpd*	*197,100 gpd*	*416 gpd*	***197,516 gpd***	*0.31 cfs*	*385.00 '*	548.18 '	549.49 '	1.31	*0.3%*	562.04 '	568.92 '	8 "	*0.875 fps*	*0.71 cfs*	*456,808 gpd*	*411,127 gpd*	***197,100 gpd***
Line A	MH A- 05 to A- 06	STA. 13 + 14.46	STA. 16 + 79.46	205	0.64 Ac	*61,500 gpd*	*184,500 gpd*	*193 gpd*	***184,693 gpd***	*0.29 cfs*	*365.00 '*	549.59 '	550.83 '	1.24	*0.3%*	568.92 '	567.44 '	8 "	*0.819 fps*	*0.71 cfs*	*456,449 gpd*	*410,805 gpd*	***184,500 gpd***
Line A	MH A- 06 to A- 07	STA. 16 + 79.46	STA. 21 + 01.34	185	1.62 Ac	*55,500 gpd*	*166,500 gpd*	*487 gpd*	***166,987 gpd***	*0.26 cfs*	*421.88 '*	560.74 '	562.17 '	1.43	*0.3%*	567.44 '	570.28 '	8 "	*0.740 fps*	*0.71 cfs*	*455,934 gpd*	*410,340 gpd*	***166,500 gpd***
Line A	MH A- 07 to A- 08	STA. 21 + 01.34	STA. 24 + 44.37	178	2.94 Ac	*53,400 gpd*	*160,200 gpd*	*883 gpd*	***161,083 gpd***	*0.25 cfs*	*343.03 '*	562.27 '	563.44 '	1.17	*0.3%*	570.28 '	575.71 '	8 "	*0.714 fps*	*0.71 cfs*	*457,357 gpd*	*411,621 gpd*	***160,200 gpd***
Line A	MH A- 08 to A- 09	STA. 24 + 44.37	STA. 26 + 13.17	172	0.26 Ac	*51,600 gpd*	*154,800 gpd*	*079 gpd*	***154,879 gpd***	*0.24 cfs*	*168.80 '*	563.54 '	564.11 '	0.57	*0.3%*	575.71 '	573.98 '	8 "	*0.687 fps*	*0.7 cfs*	*455,071 gpd*	*409,564 gpd*	***154,800 gpd***
Line A	MH A- 09 to A- 10	STA. 26 + 13.17	STA. 28 + 85.63	169	0.46 Ac	*50,700 gpd*	*152,100 gpd*	*139 gpd*	***152,239 gpd***	*0.24 cfs*	*272.46 '*	564.21 '	565.14 '	0.93	*0.3%*	573.98 '	572.95 '	8 "	*0.675 fps*	*0.71 cfs*	*457,529 gpd*	*411,776 gpd*	***152,100 gpd***
Line A	MH A- 10 to A- 11	STA. 28 + 85.63	STA. 30 + 65.63	164	6.44 Ac	*49,200 gpd*	*147,600 gpd*	*1,931 gpd*	***149,531 gpd***	*0.23 cfs*	*180.00 '*	565.24 '	567.43 '	2.19	*1.2%*	572.95 '	576.23 '	8 "	*0.663 fps*	*1.34 cfs*	*863,802 gpd*	*777,422 gpd*	***147,600 gpd***
Line A	MH A- 11 to A- 12	STA. 30 + 65.63	STA. 33 + 60.63	158	2.18 Ac	*47,400 gpd*	*142,200 gpd*	*655 gpd*	***142,855 gpd***	*0.22 cfs*	*295.00 '*	567.53 '	568.53 '	1	*0.3%*	576.23 '	578.14 '	8 "	*0.633 fps*	*0.71 cfs*	*455,950 gpd*	*410,355 gpd*	***142,200 gpd***
Line A	MH A- 12 to A- 13	STA. 33 + 60.63	STA. 35 + 27.64	129	1.51 Ac	*38,700 gpd*	*116,100 gpd*	*454 gpd*	***116,554 gpd***	*0.18 cfs*	*167.01 '*	568.63 '	569.21 '	0.58	*0.3%*	578.14 '	580.02 '	8 "	*0.517 fps*	*0.71 cfs*	*461,499 gpd*	*415,349 gpd*	***116,100 gpd***
Line A	MH A- 13 to A- 14	STA. 35 + 27.64	STA. 36 + 18.48	126	0.75 Ac	*37,800 gpd*	*113,400 gpd*	*224 gpd*	***113,624 gpd***	*0.18 cfs*	*90.84 '*	569.31 '	569.63 '	0.32	*0.4%*	580.02 '	582.67 '	8 "	*0.504 fps*	*0.72 cfs*	*464,798 gpd*	*418,319 gpd*	***113,400 gpd***
Line A	MH A- 14 to A- 15	STA. 36 + 18.48	STA. 37 + 17.99	124	0.17 Ac	*37,200 gpd*	*111,600 gpd*	*050 gpd*	***111,650 gpd***	*0.17 cfs*	*99.51 '*	569.73 '	570.08 '	0.35	*0.4%*	582.67 '	585.36 '	8 "	*0.495 fps*	*0.72 cfs*	*464,439 gpd*	*417,995 gpd*	***111,600 gpd***
Line A	MH A- 15 to A- 16	STA. 37 + 17.99	STA. 39 + 79.69	120	0.13 Ac	*36,000 gpd*	*108,000 gpd*	*038 gpd*	***108,038 gpd***	*0.17 cfs*	*261.70 '*	570.18 '	571.07 '	0.89	*0.3%*	585.36 '	585.57 '	8 "	*0.479 fps*	*0.71 cfs*	*456,690 gpd*	*411,021 gpd*	***108,000 gpd***
Line A	MH A- 16 to A- 17	STA. 39 + 79.69	STA. 42 + 59.32	109	1.53 Ac	*32,700 gpd*	*98,100 gpd*	*459 gpd*	***98,559 gpd***	*0.15 cfs*	*279.63 '*	571.17 '	572.12 '	0.95	*0.3%*	585.57 '	585.76 '	8 "	*0.437 fps*	*0.71 cfs*	*456,455 gpd*	*410,810 gpd*	***98,100 gpd***
Line A	MH A- 17 to A- 18	STA. 42 + 59.32	STA. 45 + 99.32	89	0.62 Ac	*26,700 gpd*	*80,100 gpd*	*185 gpd*	***80,285 gpd***	*0.12 cfs*	*340.00 '*	572.22 '	573.38 '	1.16	*0.3%*	585.76 '	587.46 '	8 "	*0.356 fps*	*0.71 cfs*	*457,423 gpd*	*411,681 gpd*	***80,100 gpd***
Line A	MH A- 18 to A- 19	STA. 45 + 99.32	STA. 48 + 91.99	29	1.14 Ac	*8,700 gpd*	*26,100 gpd*	*341 gpd*	***26,441 gpd***	*0.04 cfs*	*292.67 '*	579.40 '	580.40 '	1	*0.3%*	587.46 '	589.02 '	8 "	*0.117 fps*	*0.71 cfs*	*457,761 gpd*	*411,985 gpd*	***26,100 gpd***
Line A	MH A- 19 to A- 20	STA. 48 + 91.99	STA. 51 + 68.23	18	1.56 Ac	*5,400 gpd*	*16,200 gpd*	*468 gpd*	***16,668 gpd***	*0.03 cfs*	*276.24 '*	580.50 '	581.46 '	0.96	*0.3%*	589.02 '	590.42 '	8 "	*0.074 fps*	*0.71 cfs*	*461,658 gpd*	*415,492 gpd*	***16,200 gpd***
Line A	MH A- 20 to A- 21	STA. 51 + 68.23	STA. 54 + 50.26	7	0.84 Ac	*2,100 gpd*	*6,300 gpd*	*253 gpd*	***6,553 gpd***	*0.01 cfs*	*282.03 '*	581.56 '	582.56 '	1	*0.4%*	590.42 '	590.10 '	8 "	*0.029 fps*	*0.72 cfs*	*466,316 gpd*	*419,685 gpd*	***6,300 gpd***
Line B	MH A- 18 to B- 01	STA. 01 + 00.00	STA. 03 + 90.00	58	0.00 Ac	*17,400 gpd*	*52,200 gpd*	*000 gpd*	***52,200 gpd***	*0.08 cfs*	*290.00 '*	573.48 '	574.51 '	1.03	*0.4%*	587.46 '	585.88 '	8 "	*0.231 fps*	*0.72 cfs*	*466,711 gpd*	*420,040 gpd*	***52,200 gpd***
Line B	MH B- 01 to B- 02	STA. 03 + 90.00	STA. 07 + 42.45	52	2.13 Ac	*15,600 gpd*	*46,800 gpd*	*638 gpd*	***47,438 gpd***	*0.07 cfs*	*352.45 '*	574.61 '	575.81 '	1.2	*0.3%*	585.88 '	588.84 '	8 "	*0.210 fps*	*0.71 cfs*	*456,952 gpd*	*411,256 gpd*	***46,800 gpd***
Line B	MH B- 02 to A- 21	STA. 07 + 42.45	STA. 09 + 58.79	8	1.36 Ac	*2,400 gpd*	*7,200 gpd*	*408 gpd*	***7,608 gpd***	*0.01 cfs*	*216.34 '*	577.81 '	582.56 '	4.75	*2.2%*	588.84 '	590.12 '	8 "	*0.034 fps*	*1.8 cfs*	*1,160,397 gpd*	*1,044,357 gpd*	***7,200 gpd***
Line C	MH A- 17 to C- 01	STA. 01 + 00.00	STA. 03 + 90.00	14	0.71 Ac	*4,200 gpd*	*12,600 gpd*	*212 gpd*	***12,812 gpd***	*0.02 cfs*	*290.00 '*	577.64 '	578.80 '	1.16	*0.4%*	585.76 '	586.21 '	8 "	*0.057 fps*	*0.77 cfs*	*495,289 gpd*	*445,760 gpd*	***12,600 gpd***
Line C	MH C- 01 to C- 02	STA. 03 + 90.00	STA. 05 + 99.99	8	0.10 Ac	*2,400 gpd*	*7,200 gpd*	*030 gpd*	***7,230 gpd***	*0.01 cfs*	*209.99 '*	578.90 '	579.74 '	0.84	*0.4%*	586.21 '	587.27 '	8 "	*0.032 fps*	*0.77 cfs*	*495,300 gpd*	*445,770 gpd*	***7,200 gpd***
Line D	MH B- 02 to D- 01	STA. 01 + 00.00	STA. 04 + 59.99	30	0.00 Ac	*9,000 gpd*	*27,000 gpd*	*000 gpd*	***27,000 gpd***	*0.04 cfs*	*359.99 '*	575.91 '	577.13 '	1.22	*0.3%*	588.84 '	589.61 '	8 "	*0.120 fps*	*0.71 cfs*	*455,893 gpd*	*410,304 gpd*	***27,000 gpd***

CUDEENGINEERS.COM

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PARK HOUSE UNIT 1

SANITARY SEWER GENERAL NOTES

DATE 08/07/2025

PROJECT NO. 04154-000

DRAWN BY SG/JVA

CHECKED BY JL/AC

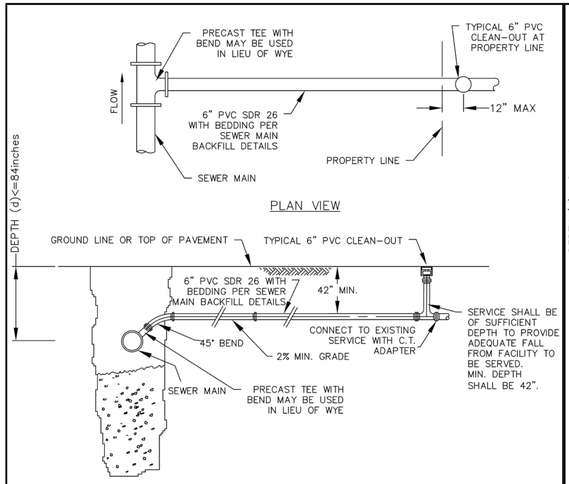
REVISIONS 1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPE/S No. 10048500

C4.D1

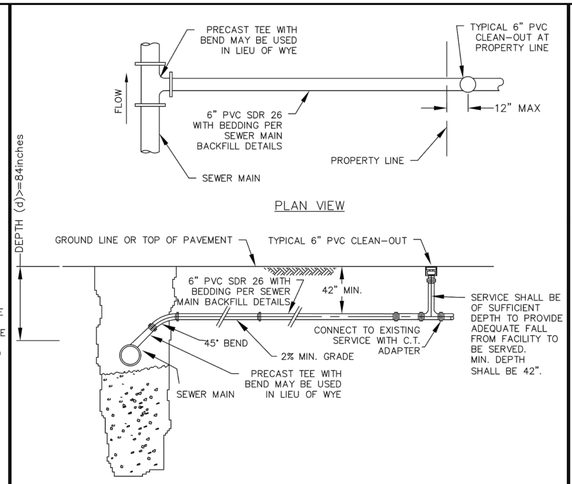
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



SHALLOW SANITARY SEWER RESIDENTIAL SERVICE CONNECTION

NOTE:
1. SEWER SERVICE LINE BACKFILL SHALL BE IDENTICAL TO SEWER MAIN (WW-8).
2. CITY INSPECTOR SHALL APPROVE DEPTHS UNDER 42" (MIN.)
3. LATERAL DEPTH TO BE 42" MINIMUM TO ENSURE POSITIVE FLOW.
4. SDR 26 PRESSURE RATED PIPE SHALL BE USED IF TRENCH DEPTH IS OVER 15'
5. DUPLEXES, TRIPLEXES AND QUADPLEXES MUST HAVE INDIVIDUAL SERVICE CONNECTIONS PER EACH LIVING UNIT.(DUAL OR SHARED CONNECTIONS TO A SINGLE LATERAL IS NO LONGER ACCEPTED).

SEGUIN TEXAS	DATE ISSUED:	JUNE 1, 2013		TITLE
	REVISION	DATE	BY	SHALLOW SANITARY SEWER RESIDENTIAL SERVICE CONNECTION
	1ST REVISION	8/10/18	DB	
	2ND REVISION	6/18/20	DB	
	3RD REVISION	10/21/21	DB	
	4TH REVISION	11/08/23	DB	SCALE: N.T.S. DRAWING No. WW-1



SANITARY SEWER RESIDENTIAL SERVICE CONNECTION

NOTE:
1. SEWER SERVICE LINE BACKFILL SHALL BE IDENTICAL TO SEWER MAIN (WW-8).
2. CITY INSPECTOR SHALL APPROVE DEPTHS UNDER 42" (MIN.)
3. LATERAL DEPTH TO BE 42" MINIMUM TO ENSURE POSITIVE FLOW.
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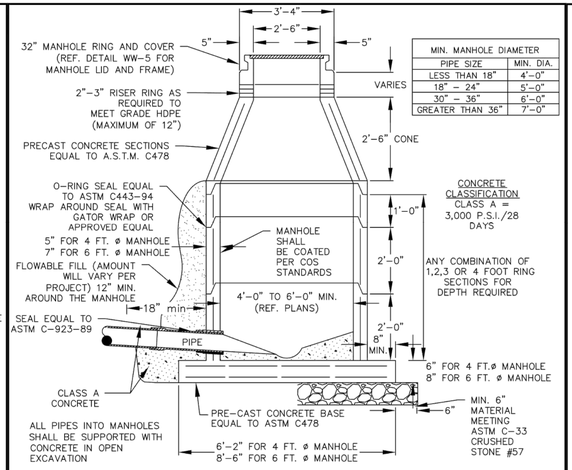
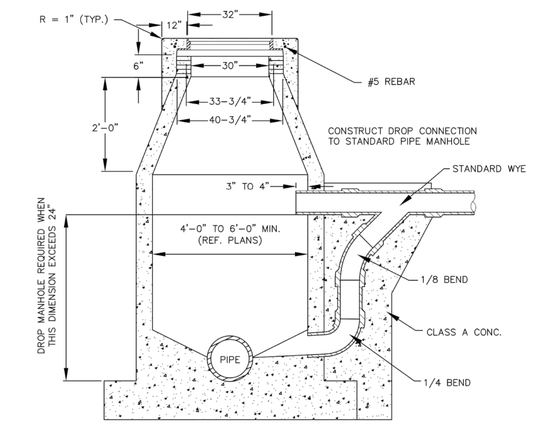
SEGUIN TEXAS	DATE ISSUED:	JUNE 1, 2013		TITLE
	REVISION	DATE	BY	SANITARY SEWER RESIDENTIAL SERVICE CONNECTION
	1ST REVISION	8/10/18	DB	
	2ND REVISION	6/18/20	DB	
	3RD REVISION	10/21/21	DB	
	4TH REVISION	11/08/23	DB	SCALE: N.T.S. DRAWING No. WW-1.2



MIN. MANHOLE DIAMETER	
PIPE SIZE	MIN. DIA.
LESS THAN 18"	4'-0"
18" - 24"	5'-0"
30" - 36"	6'-0"
GREATER THAN 36"	7'-0"

NOTES:
1. MANHOLE INVERTS: THE BOTTOM OF THE MANHOLE SHALL BE PROVIDED WITH A "U" SHAPED CHANNEL THAT IS AS MUCH AS POSSIBLE A SMOOTH CONTINUATION OF THE INLET AND OUTLET PIPES. FOR MANHOLES CONNECTED TO PIPES LESS THAN 15 INCHES IN DIAMETER THE CHANNEL DEPTH SHALL BE AT LEAST HALF THE LARGEST PIPE DIAMETER. FOR MANHOLES CONNECTED TO PIPES 15 TO 24 INCHES IN DIAMETER THE CHANNEL DEPTH SHALL BE AT LEAST THREE FOURTHS THE LARGEST PIPE DIAMETER. IN MANHOLES WITH PIPES OF DIFFERENT SIZES, THE TOES OF THE PIPES SHALL BE PLACED AT THE SAME ELEVATION AND FLOW CHANNELS IN THE INVERT SLOPED ON AN EVEN SLOPE FROM PIPE TO PIPE. THE BENCH PROVIDED ABOVE THE CHANNEL SHALL BE SLOPED AT A MINIMUM OF 0.5 INCH PER FOOT.
2. CONTRACTOR SHALL GROUT THE INTERNAL AND EXTERNAL JOINTS FOR EACH RING SECTION.
3. 0.1' DROP SHALL BE PROVIDED WITHIN THE MANHOLE.
4. MANHOLE SHALL BE COATED PER APPROVED MANUFACTURER'S SPECIFICATIONS OUTLINED IN COS STANDARD PRODUCTS LIST.
5. ALL MANHOLES SHALL BE BOLTED, UNLESS WAIVED BY THE UTILITY ENGINEER.

SEGUIN TEXAS	DATE ISSUED:	JUNE 1, 2013		TITLE
	REVISION	DATE	BY	SANITARY SEWER PRECAST CONCRETE MANHOLE
	1ST REVISION	7/29/15	TN	
	2ND REVISION	8/10/18	DB	
	3RD REVISION	12/08/20	DB	
	4TH REVISION	11/08/23	DB	SCALE: N.T.S. DRAWING No. WW-2



NOTES:
1. CONTRACTOR SHALL GROUT THE INTERNAL AND EXTERNAL JOINTS FOR EACH RING SECTION.
2. DROP SECTION OF PIPE SHALL BE SAME DIAMETER AS SEWER MAIN.
3. PER TCEQ, CHAPTER 217, SECTION 55.L.2.H., "A WASTEWATER COLLECTION SYSTEM PIPE ENTERING A MANHOLE MORE THAN 24 INCHES ABOVE AN INVERT MUST HAVE A DROP PIPE."

SEGUIN TEXAS	DATE ISSUED:	JUNE 1, 2013		TITLE
	REVISION	DATE	BY	SANITARY SEWER DROP MANHOLE
	1ST REVISION	7/29/15	TN	
	2ND REVISION	12/24/15	AM	
	3RD REVISION	5/24/18	DB	
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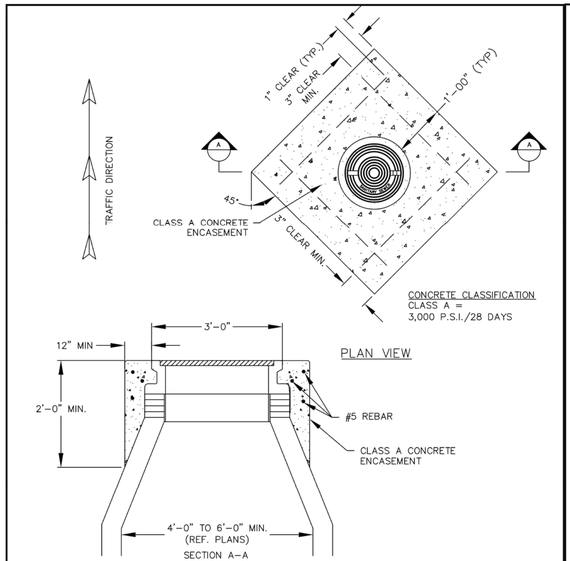
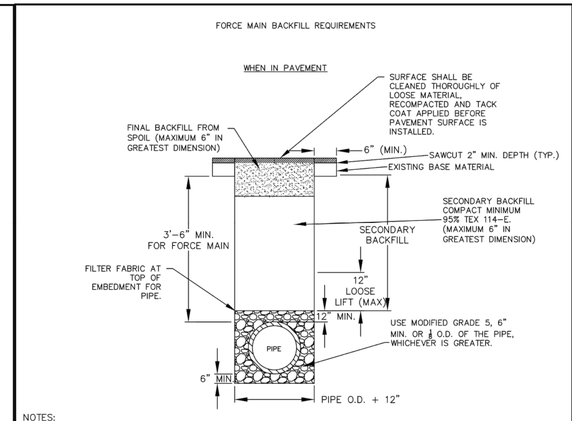
It's real.



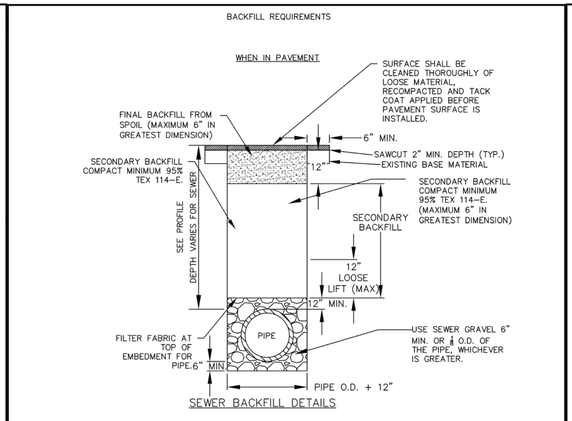
NOTES:
1. CONCRETE ENCASEMENT SHALL BE INSTALLED AFTER FINAL PAVEMENT HAS BEEN INSTALLED.
2. MANHOLES SHALL BE LOCATED BY GPS AND PROVIDED TO THE CITY IN TEXAS STATE PLANE COORDINATES, NAD 83 (93), SOUTH CENTRAL ZONE.
3. CONCRETE ENCASEMENT SHALL ALSO BE INSTALLED IN MANHOLES LOCATED IN NATURAL GROUND.

SEGUIN TEXAS	DATE ISSUED:	JUNE 1, 2013		TITLE
	REVISION	DATE	BY	MANHOLE RING ENCASEMENT DETAILS
	1ST REVISION	7/29/15	TN	
	2ND REVISION	12/24/15	AM	
	3RD REVISION	5/24/18	DB	
	4TH REVISION	11/08/23	DB	SCALE: N.T.S. DRAWING No. WW-6



NOTES:
1. FOR ASPHALT OR CONCRETE STREET REPAIRS WHERE THE SAW-CUT PAVEMENT EDGE WILL BE WITHIN 3' OF EDGE OF EXISTING PAVEMENT OR LIP OF GUTTER, THE EXISTING PAVEMENT SURFACE BETWEEN THE DITCH LINE AND EDGE OF PAVEMENT OR LIP OF GUTTER SHALL BE REMOVED AND REPLACED WITH MATERIAL SPECIFIED.
2. FOR STREETS NOT BEING RECONSTRUCTED, SURFACE MATERIALS SHALL BE EQUAL TO MATERIAL REMOVED-MINIMUM AMOUNTS; 2" HMAC (TxDOT ITEM 340, TYPE D); FLEX (CRUSHED STONE) BASE (TxDOT ITEM 247, TYPE A, GRADE 2) COMPACTED IN 6" LIFTS TO 100% DENSITY BY TEX 113E. EXISTING ASPHALT TO BE SAW CUT.
3. SECONDARY BACKFILL SHALL CONSIST OF 12" LIFTS COMPRISED OF MATERIALS REMOVED FROM THE TRENCH AND SHALL BE FREE OF BRUSH, DEBRIS AND TRASH. MAXIMUM 6" IN GREATEST DIMENSION.
4. A DENSITY TEST SHALL BE PERFORMED ON EACH 12" LIFT, EVERY 200 FEET.
5. INDUCTIVE TRACER DETECTION TAPE SHALL BE PLACED DIRECTLY ABOVE THE CENTERLINE OF ALL NON-METALLIC PIPE A MINIMUM OF 12" BELOW SUBGRADE OR, IN AREAS OUTSIDE THE LIMITS OF PAVEMENT, A MINIMUM OF 18" BELOW FINISHED GRADE. THE TRACER TAPE SHALL BE ENCASED IN A PROTECTIVE, INERT, PLASTIC JACKET AND COLOR CODED ACCORDING TO THE AMERICAN PUBLIC WORKS ASSOCIATION UNIFORM COLOR CODE. EXCEPT FOR MINIMUM DEPTH OF COVER, THE TRACER TAPE SHALL BE PLACED ACCORDING TO THE MANUFACTURE'S RECOMMENDATIONS.
6. FOR PIPE NOT INSTALLED IN PAVEMENT, THE SURFACE OF THE BACKFILLED TRENCH SHALL BE RESTORED TO MATCH PREVIOUS EXISTING CONDITIONS.
7. FOR STREETS BEING RECONSTRUCTED ONLY, CONTRACTOR MAY BACKFILL FINAL BASE SECTION DEPTH WITH SPOIL MATERIAL PRIOR TO STREET EXCAVATION TO ALLOW TRAFFIC FLOW. DEPTH VARIES.

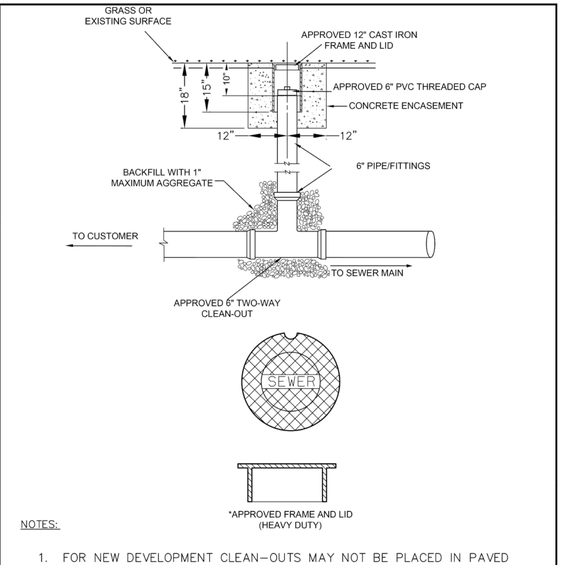
SEGUIN TEXAS	DATE ISSUED:	JUNE 1, 2013		TITLE
	REVISION	DATE	BY	FORCE MAIN BACKFILL DETAIL
	1ST REVISION	5/29/18	DB	
	2ND REVISION	11/08/23	DB	
	3RD REVISION	05/06/24	DB	
				SCALE: N.T.S. DRAWING No. WW-7



SEWER BACKFILL DETAILS

NOTES:
1. FOR ASPHALT OR CONCRETE STREET REPAIRS WHERE THE SAW-CUT PAVEMENT EDGE WILL BE WITHIN 3' OF EDGE OF EXISTING PAVEMENT OR LIP OF GUTTER, THE EXISTING PAVEMENT SURFACE BETWEEN THE DITCH LINE AND EDGE OF PAVEMENT OR LIP OF GUTTER SHALL BE REMOVED AND REPLACED WITH MATERIAL SPECIFIED.
2. FOR STREETS NOT BEING RECONSTRUCTED, SURFACE MATERIALS SHALL BE EQUAL TO MATERIAL REMOVED-MINIMUM AMOUNTS; 2" HMAC (TxDOT ITEM 340, TYPE D); FLEX (CRUSHED STONE) BASE (TxDOT ITEM 247, TYPE A, GRADE 2) COMPACTED IN 6" LIFTS TO 100% DENSITY BY TEX 113E. EXISTING ASPHALT TO BE SAW CUT.
3. SECONDARY BACKFILL SHALL CONSIST OF 12" LIFTS COMPRISED OF MATERIALS REMOVED FROM THE TRENCH AND SHALL BE FREE OF BRUSH, DEBRIS AND TRASH. MAXIMUM 6" IN GREATEST DIMENSION.
4. A DENSITY TEST SHALL BE PERFORMED ON EACH 12" LIFT, EVERY 200 FEET.
5. INDUCTIVE TRACER DETECTION TAPE SHALL BE PLACED DIRECTLY ABOVE THE CENTERLINE OF ALL NON-METALLIC PIPE A MINIMUM OF 12" BELOW SUBGRADE OR, IN AREAS OUTSIDE THE LIMITS OF PAVEMENT, A MINIMUM OF 18" BELOW FINISHED GRADE. THE TRACER TAPE SHALL BE ENCASED IN A PROTECTIVE, INERT, PLASTIC JACKET AND COLOR CODED ACCORDING TO THE AMERICAN PUBLIC WORKS ASSOCIATION UNIFORM COLOR CODE. EXCEPT FOR MINIMUM DEPTH OF COVER, THE TRACER TAPE SHALL BE PLACED ACCORDING TO THE MANUFACTURE'S RECOMMENDATIONS.
6. FOR PIPE NOT INSTALLED IN PAVEMENT, THE SURFACE OF THE BACKFILLED TRENCH SHALL BE RESTORED TO MATCH PREVIOUS EXISTING CONDITIONS.
7. FOR STREETS BEING RECONSTRUCTED ONLY, CONTRACTOR MAY BACKFILL FINAL BASE SECTION DEPTH WITH SPOIL MATERIAL PRIOR TO STREET EXCAVATION TO ALLOW TRAFFIC FLOW. DEPTH VARIES.

SEGUIN TEXAS	DATE ISSUED:	JUNE 1, 2013		TITLE
	REVISION	DATE	BY	SEWER BACKFILL DETAIL
	1ST REVISION	6/12/15	TN	
	2ND REVISION	12/11/15	AM	
	3RD REVISION	5/25/18	DB	
	4TH REVISION	11/08/23	DB	SCALE: N.T.S. DRAWING No. WW-8



NOTES:

1. FOR NEW DEVELOPMENT CLEAN-OUTS MAY NOT BE PLACED IN PAVED AREAS I.E. SIDEWALKS, DRIVEWAYS, OR PARKING LOTS, AND MUST BE LOCATED A MINIMUM OF 6" FROM ALL PAVED AREAS.

SEGUIN TEXAS	DATE ISSUED:	FEBRUARY 1, 2019		TITLE
	REVISION	DATE	BY	TYPICAL 6" CLEANOUT DETAIL
	1ST REVISION	11/08/23	DB	
				SCALE: N.T.S. DRAWING No. WW-20

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San Marcos, Texas 78666
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PARK HOUSE UNIT 1

SANITARY SEWER STANDARD DETAILS

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

CUDE ENGINEERS
TBPELS No. 10048500

C4.D2

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REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

LEGEND

- W — = PROPOSED WATER SERVICE
- XXX L.F. - XX" PVC C-909 — = PROPOSED WATER MAIN
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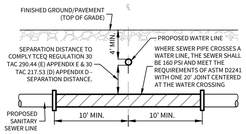
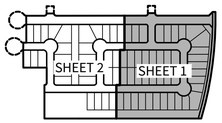
- IRR — = PROPOSED IRRIGATION SERVICE METER
- OR — = ADA RAMPS



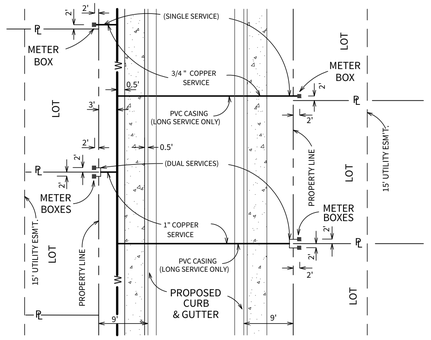
TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.



SITE MAP

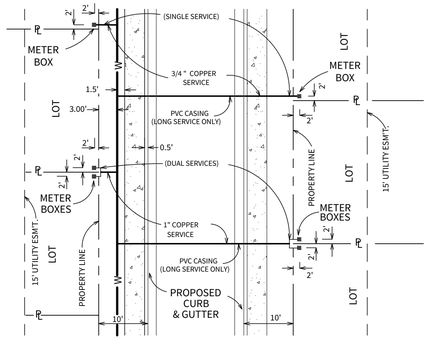
NOT TO SCALE



WATER METER BOX LOCATION (60' R.O.W. / 5' SDWK)

N.T.S.

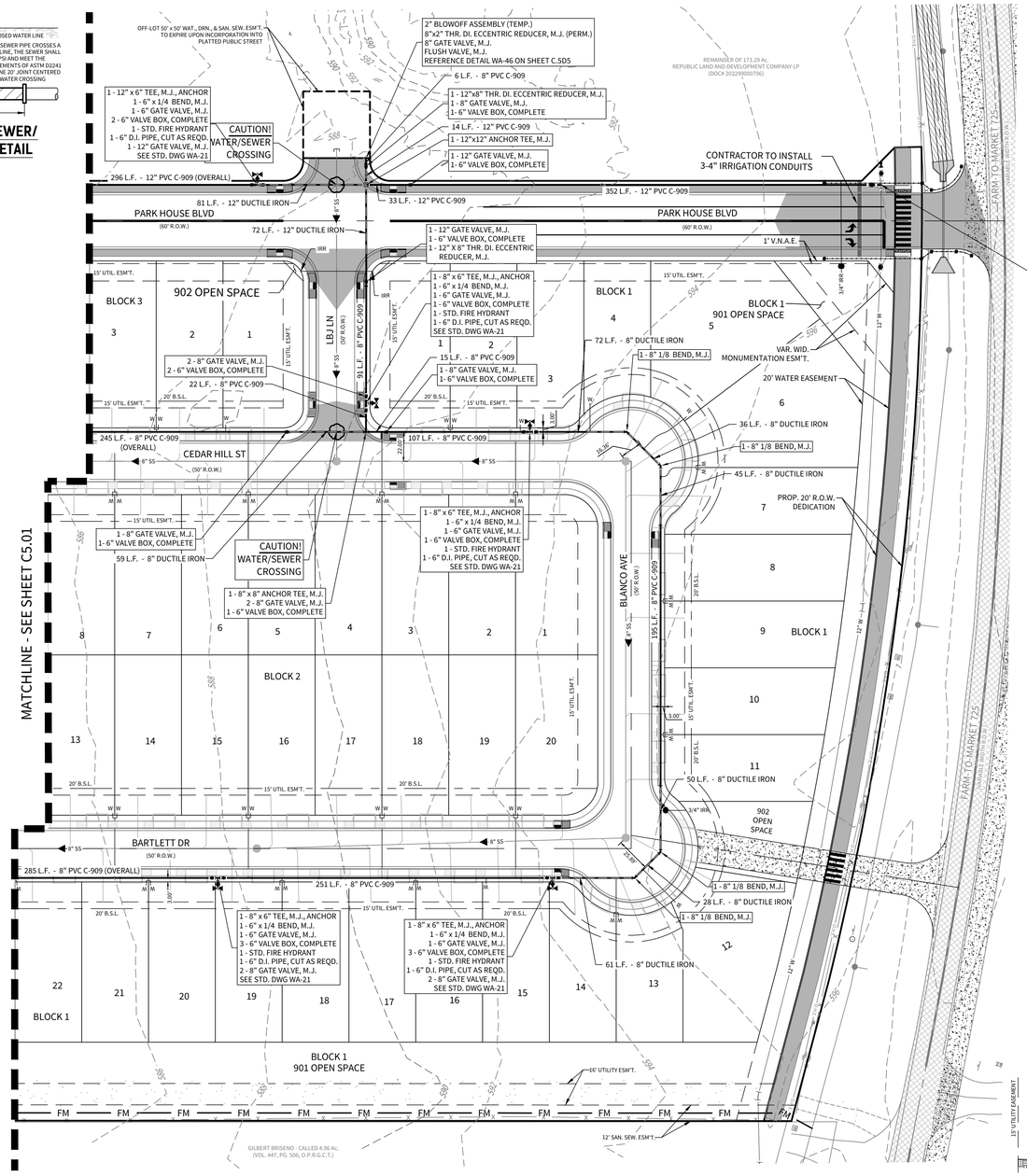
SEE WATER SERVICE CASING DETAIL WA-35 ON SHEET C5.D5

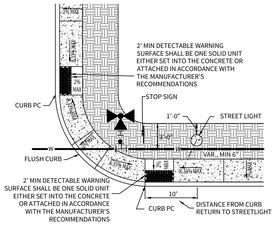


WATER METER BOX LOCATION (50' R.O.W. / 5' SDWK)

N.T.S.

SEE WATER SERVICE CASING DETAIL WA-35 ON SHEET C5.D5





FIRE HYDRANT LOCATION ON RETURNS DETAIL N.T.S.

NOTES:

1) STREET LIGHTS SHALL BE INSTALLED 2' WITHIN R.O.W. AND A MINIMUM DISTANCE OF 6" FROM THE PROPOSED SIDEWALK, AND A MINIMUM DISTANCE OF 5' FROM FACE OF CURB.
2) FIRE HYDRANTS (AS APPLICABLE) SHALL BE INSTALLED WITHIN THE R.O.W. A MINIMUM OF 1' FROM THE BACK OF THE CURB AND A MINIMUM OF 1' AWAY FROM THE PROPOSED SIDEWALK.
3) FIRE HYDRANTS REQUIRE 5' MINIMUM CLEARANCE FROM LIGHT POLES OR OTHER OBSTRUCTIONS.

SHSUD SHEET NOTES

1. EXISTING WATER INFRASTRUCTURE IN THE VICINITY OF THE TRACT IS AVAILABLE TO SERVE THE PROPOSED DEVELOPMENT. IF THE DEVELOPMENT EXCEEDS THE CAPACITY OF THE EXISTING WATER INFRASTRUCTURE, THEN IT WILL BE THE DEVELOPER'S RESPONSIBILITY TO MAKE THE NECESSARY IMPROVEMENTS TO THE EXISTING WATER INFRASTRUCTURE TO PROVIDE SUFFICIENT CAPACITY. THE EXTENT OF THE NECESSARY WATER IMPROVEMENTS WILL BE OUTLINED IN A MEMORANDUM OF UNDERSTANDING OR NON-STANDARD SERVICE AGREEMENT PRIOR TO THE APPROVAL OF ANY FINAL PLAT.
2. SHSUD SHALL HAVE ACCESS TO METER LOCATIONS FROM THE FRONT YARD WITH THE LOCATION NOT BEING WITHIN A FENCED AREA.
3. ANY EASEMENT DESIGNATED AS A SHSUD UTILITY EASEMENT SHALL REMAIN OPEN ACCESS AT ALL TIMES AND SHALL NOT BE WITHIN A FENCED AREA.
4. ALL SHSUD EASEMENTS ARE FOR CONSTRUCTION, MAINTENANCE (INCLUDING BUT NOT LIMITED TO REMOVAL OF TREES AND OTHER OBSTRUCTIONS), READING OF METERS, AND REPAIR OF ANY SHSUD FACILITY LOCATED WITHIN SAID EASEMENT.
5. WATER LINE IS TO BE CONSTRUCTED IN ACCORDANCE WITH SPRINGS HILL SPECIAL UTILITY DISTRICT STANDARD DRAWINGS AND SPECIFICATIONS.
6. WATER MAIN SHALL HAVE A MINIMUM OF 30 INCHES OF COVER, OTHERWISE CONCRETE ENCASEMENT WILL BE REQUIRED.
7. CONTRACTOR WILL KEEP THE AREA ON TOP OF AND AROUND THE WATER METER BOX FREE OF ALL OBJECTS AND DEBRIS.
8. NO METER BOXES TO BE SET IN DRIVEWAYS. ANY METER BOX SET IN A DRIVEWAY WILL BE RELOCATED AT THE CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.
9. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, DRIVEWAYS, OR ROADWAYS. SHSUD WILL NOT BE RESPONSIBLE FOR ANY DAMAGES TO CONCRETE OR PAVED AREAS IF DEVELOPER DOES NOT COMPLY.
10. PERMANENT TIE-INS TO IN-SERVICE MAINS SHALL ONLY BE CONSTRUCTED FOLLOWING FLUSHING, DISINFECTION, TESTING, AND APPROVAL BY SHSUD. TEMPORARY CONNECTIONS FOR FILLING, FLUSHING, AND TESTING MUST BE EQUIPPED WITH SHSUD-PROVIDED BACKFLOW PREVENTION TO MAINTAIN CROSS CONNECTION CONTROL.
11. A HYDROSTATIC TEST SHALL BE PERFORMED AFTER SERVICES ARE CONNECTED AND FINAL GRADING AND PLACEMENT ARE COMPLETE.
12. WATER SERVICE LINE CROSSINGS OF CURBS SHALL BE INDICATED BY A "W" STAMPED IN THE FACE OF THE CURB DURING CONCRETE PLACEMENT WITH A TOOL INTENDED FOR THE PURPOSE. VALVE CROSSINGS OF CURBS SHALL BE INDICATED BY A "V" STAMPED IN THE FACE OF THE CURB DURING CONCRETE PLACEMENT WITH A TOOL INTENDED FOR THE PURPOSE. LETTERING SHALL BE 4" IN HEIGHT AND HAVE BEVELED EDGES TO PREVENT CHIPPING OR SPAWLING OVER TIME.

EDU TABLE				
	RESIDENTIAL SERVICE	IRRIGATION (3/4") SERVICE (3/4")	TOTAL EDUs	NSSC TOTAL EDUs
SUBDIVISION UNIT #1 (PROPOSED)	72	3	75	
SUBDIVISION UNIT #2 (FUTURE)	75	3	78	
SUBDIVISION UNIT #3 (FUTURE)	65		65	
SUBDIVISION UNIT #4 (FUTURE)	64		64	
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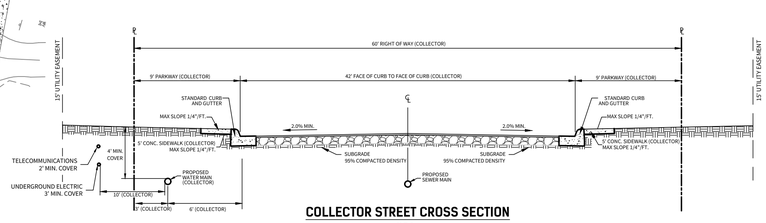
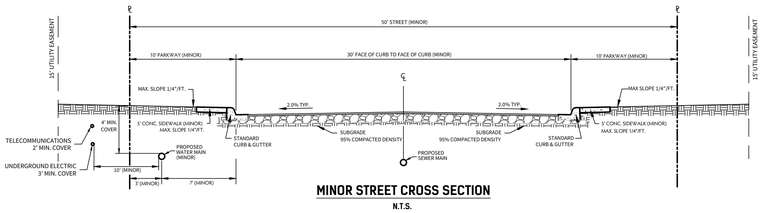
SUBDIVISION UNIT #6 (FUTURE)	88		88	
SUBDIVISION UNIT #7 (FUTURE)	80	1.5	82	
SUBDIVISION UNIT #8 (FUTURE)	84		84	
TOTAL SUBDIVISION EDUs	595	8	603	603
TOTAL REMAINING EDUs PER NSSA (MARCH, 2025)				



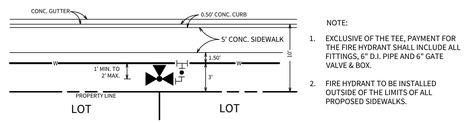
COLLECTOR STREET CROSS SECTION

N.T.S.



MINOR STREET CROSS SECTION

N.T.S.

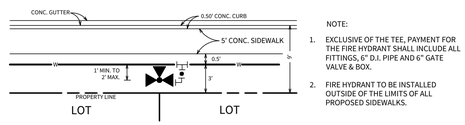


NOTE:

1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

TYPICAL FIRE HYDRANT DETAIL (5' SIDEWALK / 50' ROW)

N.T.S.



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TYPICAL FIRE HYDRANT DETAIL (5' SIDEWALK / 60' ROW)

N.T.S.

JOINT RESTRAINT DIMENSION TABLE		
TYPE	MAIN SIZES	RESTRAINT LENGTH(S)
TEE (DUCTILE IRON)	12" x 12"	28' ALONG BRANCH OF TEE
TEE (PVC)	12" x 6"	1' ALONG BRANCH OF TEE
TEE (PVC)	8" x 6"	1' ALONG BRANCH OF TEE
TEE (PVC)	8" x 8"	12' ALONG BRANCH OF TEE
DEAD END / IN-LINE VALVE (PVC)	12"	110'
DEAD END / IN-LINE VALVE (PVC)	8"	78'
HORIZONTAL OFFSET (DI)	12" x 1/8 BEND	19' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET (PVC)	12" x 1/8 BEND	25' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET (PVC)	12" x 1/32 BEND	6' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET (DI)	8" x 1/8 BEND	14' ON BOTH SIDES OF BEND
REDUCER (PVC)	12" x 8"	58'

* CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BASED UPON THE CONDITIONS ENCOUNTERED DURING INSTALLATION.
** PRESSURE OF 150 PSI ASSUMED FOR CALCULATIONS
*** RESTRAINT LENGTHS WERE CALCULATED USING "EBBA IRON RESTRAINT LENGTH CALCULATOR"

TRENCH EXCAVATION PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

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PARK HOUSE UNIT 1

WATER DISTRIBUTION PLAN

DATE 08/29/2025

PROJECT NO. 04154-000

DRAWN BY SG/JVA

CHECKED BY JL/AC

REVISIONS 1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C5.00

R:\04154\001\2-DWG\4-Plans\C5.00_WATER DISTRIBUTION PLAN.dwg, 8/29/2025 6:29:33 PM, josh.ballis

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

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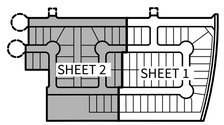
- OR — = ADA RAMPS

SCALE: 1"=50'

0 50 100



SITE MAP
NOT TO SCALE

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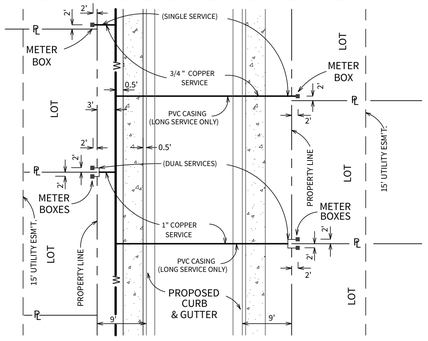
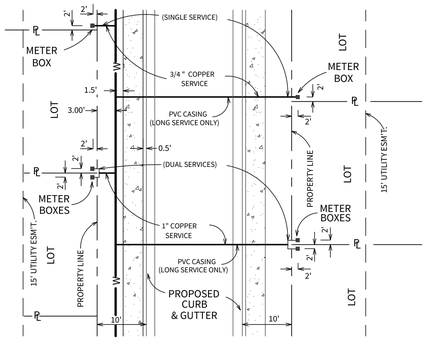


WATER METER BOX LOCATION (60' R.O.W. / 5' SDWK)
N.T.S.
SEE WATER SERVICE CASING DETAIL WA-35 ON SHEET C5.D5



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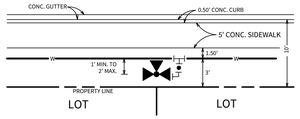

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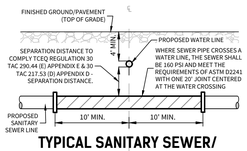
TYPICAL FIRE HYDRANT DETAIL (5' SIDEWALK / 50' ROW)
N.T.S.



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
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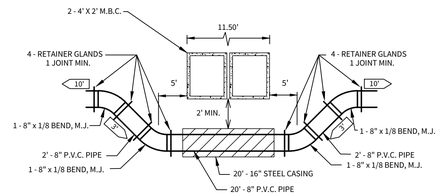
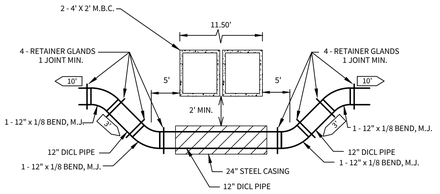


ALL RETAINDER GLANDS TO BE "MEGA-LUG" TYPE.

WATER / DRAIN "A" CROSSING #1
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)

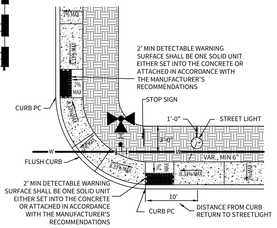


ALL RETAINDER GLANDS TO BE "MEGA-LUG" TYPE.

WATER / DRAIN "A" CROSSING #2
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)

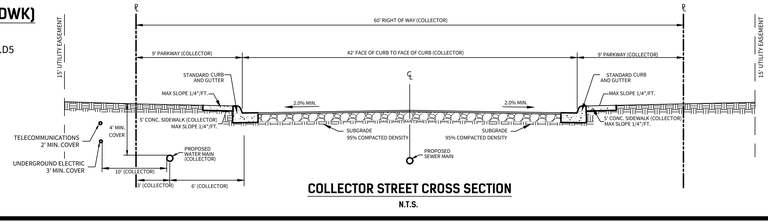
SHSUD SHEET NOTES

1. EXISTING WATER INFRASTRUCTURE IN THE VICINITY OF THE TRACT IS AVAILABLE TO SERVE THE PROPOSED DEVELOPMENT. IF THE DEVELOPMENT EXCEEDS THE CAPACITY OF THE EXISTING WATER INFRASTRUCTURE, THEN IT WILL BE THE DEVELOPER'S RESPONSIBILITY TO MAKE THE NECESSARY IMPROVEMENTS TO THE EXISTING WATER INFRASTRUCTURE TO PROVIDE SUFFICIENT CAPACITY. THE EXTENT OF THE NECESSARY WATER IMPROVEMENTS WILL BE OUTLINED IN A MEMORANDUM OF UNDERSTANDING OR NON-STANDARD SERVICE AGREEMENT PRIOR TO THE APPROVAL OF ANY FINAL PLAT.
2. SHSUD SHALL HAVE ACCESS TO METER LOCATIONS FROM THE FRONT YARD WITH THE LOCATION NOT BEING WITHIN A FENCED AREA.
3. ANY EASEMENT DESIGNATED AS A SHSUD UTILITY EASEMENT SHALL REMAIN OPEN ACCESS AT ALL TIMES AND SHALL NOT BE WITHIN A FENCED AREA.
4. ALL SHSUD EASEMENTS ARE FOR CONSTRUCTION, MAINTENANCE (INCLUDING BUT NOT LIMITED TO REMOVAL OF TREES AND OTHER OBSTRUCTIONS), READING OF METERS, AND REPAIR OF ANY SHSUD FACILITY LOCATED WITHIN SAID EASEMENT.
5. WATER LINE IS TO BE CONSTRUCTED IN ACCORDANCE WITH SPRINGS HILL SPECIAL UTILITY DISTRICT STANDARD DRAWINGS AND SPECIFICATIONS.
6. WATER MAIN SHALL HAVE A MINIMUM OF 30 INCHES OF COVER, OTHERWISE CONCRETE ENCASEMENT WILL BE REQUIRED.
7. CONTRACTOR WILL KEEP THE AREA ON TOP OF AND AROUND THE WATER METER BOX FREE OF ALL OBJECTS AND DEBRIS.
8. NO METER BOXES TO BE SET IN DRIVEWAYS. ANY METER BOX SET IN A DRIVEWAY WILL BE RELOCATED AT THE CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.
9. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, DRIVEWAYS, OR ROADWAYS. SHSUD WILL NOT BE RESPONSIBLE FOR ANY DAMAGES TO CONCRETE OR PAVED AREAS IF DEVELOPER DOES NOT COMPLY.
10. PERMANENT TIE-INS TO IN-SERVICE MAINS SHALL ONLY BE CONSTRUCTED FOLLOWING FLUSHING, DISINFECTION, TESTING, AND APPROVAL BY SHSUD. TEMPORARY CONNECTIONS FOR FILLING, FLUSHING, AND TESTING MUST BE EQUIPPED WITH SHSUD-PROVIDED BACKFLOW PREVENTION TO MAINTAIN CROSS CONNECTION CONTROL.
11. A HYDROSTATIC TEST SHALL BE PERFORMED AFTER SERVICES ARE CONNECTED AND FINAL GRADING AND PLACEMENT ARE COMPLETE.
12. WATER SERVICE LINE CROSSINGS OF CURBS SHALL BE INDICATED BY A "W" STAMPED IN THE FACE OF THE CURB DURING CONCRETE PLACEMENT WITH A TOOL INTENDED FOR THE PURPOSE. VALVE CROSSINGS OF CURBS SHALL BE INDICATED BY A "V" STAMPED IN THE FACE OF THE CURB DURING CONCRETE PLACEMENT WITH A TOOL INTENDED FOR THE PURPOSE. LETTERING SHALL BE 4" IN HEIGHT AND HAVE BEVELED EDGES TO PREVENT CHIPPING OR SPAWLING OVER TIME.

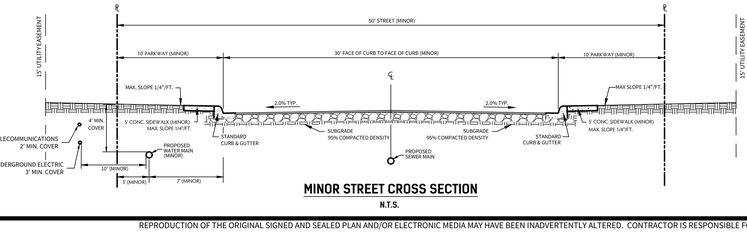


FIRE HYDRANT LOCATION ON RETURNS DETAIL N.T.S.

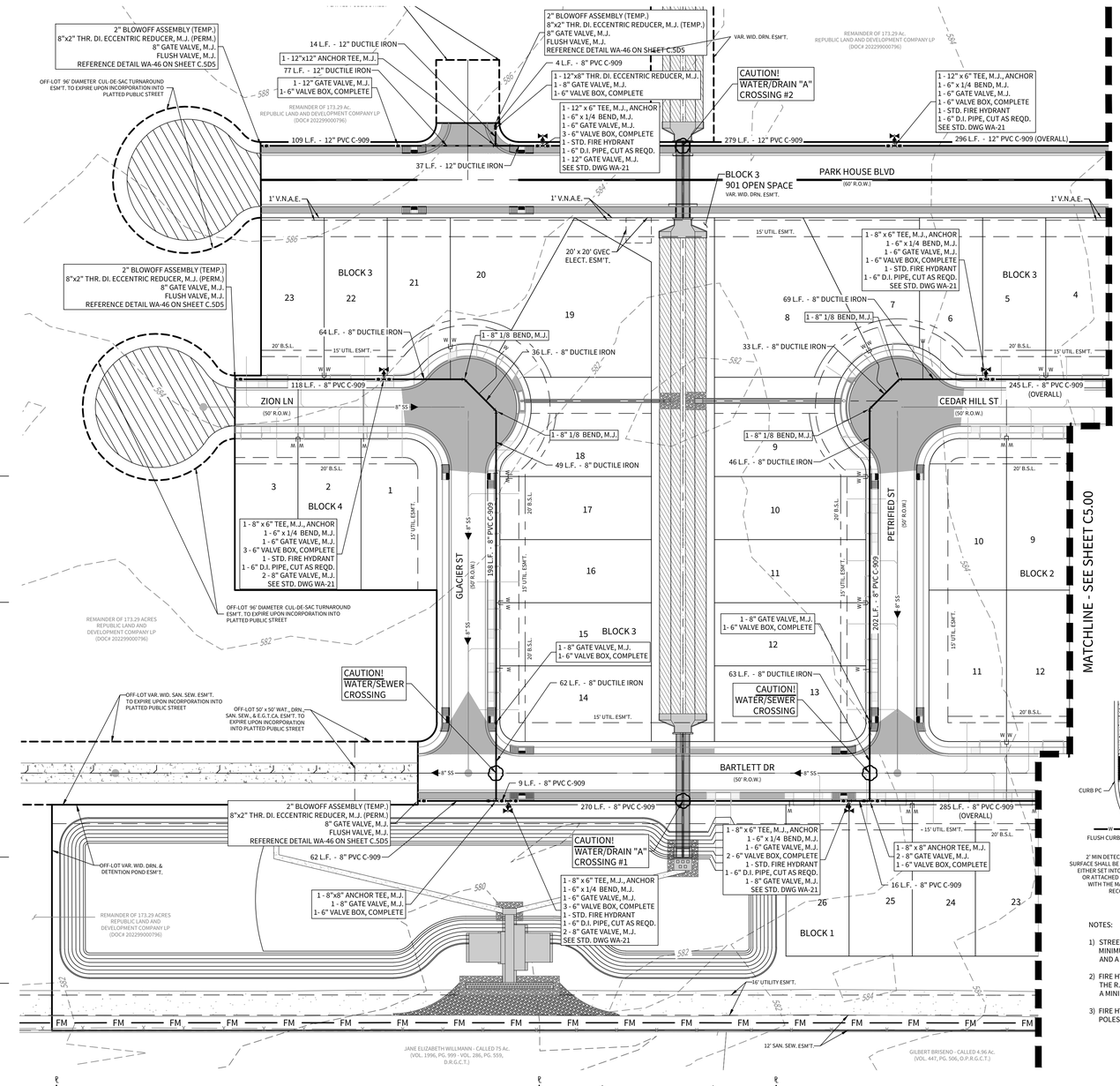
NOTES:
1) STREET LIGHTS SHALL BE INSTALLED 2' WITHIN R.O.W. AND A MINIMUM DISTANCE OF 6' FROM THE PROPOSED SIDEWALK, AND A MINIMUM DISTANCE OF 5' FROM FACE OF CURB.
2) FIRE HYDRANTS (AS APPLICABLE) SHALL BE INSTALLED WITHIN THE R.O.W. A MINIMUM OF 1' FROM THE BACK OF THE CURB AND A MINIMUM OF 1' AWAY FROM THE PROPOSED SIDEWALK.
3) FIRE HYDRANTS REQUIRE 5' MINIMUM CLEARANCE FROM LIGHT POLES OR OTHER OBSTRUCTIONS.



COLLECTOR STREET CROSS SECTION
N.T.S.



MINOR STREET CROSS SECTION
N.T.S.



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CUDE ENGINEERS

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San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE UNIT 1

WATER DISTRIBUTION PLAN

DATE
08/29/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C5.01

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

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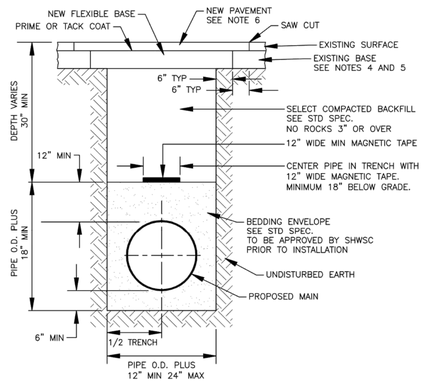
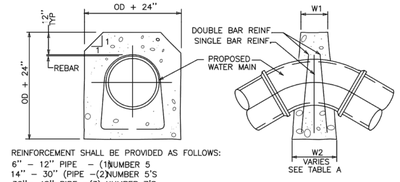


NOTES:

1. THE EXISTING PAVING SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE, A MINIMUM OF 12 INCHES WIDER THAN THE UNDISTURBED SIDES OF THE TRENCH, SYMMETRICAL ABOUT THE CENTERLINE OF THE EXCAVATION.
2. ANY CONCRETE PAVING SHALL BE CUT 6 INCHES WIDER THAN THE UNDISTURBED SIDES OF THE EXCAVATION.
3. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH COLD MIX OR TEMPORARY HOT MIX ASPHALTIC CONCRETE.
4. ROAD BASE AND SURFACE MATERIALS IN THE TRENCH CUT SHALL BE REPLACED IN KIND, OF EQUAL THICKNESS, OR WITH MINIMUM BASE THICKNESS OF 10 INCHES WHICHEVER IS GREATER.
5. ALL DAMAGED AREAS OF PAVEMENT OUTSIDE THE TRENCH CUT AREA SHALL BE REMOVED AND REPLACED WITH MINIMUM OF 8 INCHES OF BASE OR MATCH EXISTING, WHICHEVER IS GREATER.
6. SURFACE PAVEMENT SHALL BE OF THE KIND AND THICKNESS AS EXISTING, OR MINIMUM 2 INCHES, WHICHEVER IS GREATER.
7. ALL WATER LINES SHALL HAVE A MINIMUM PRESSURE CLASS OF 200 PSI.

SPRINGS HILL SPECIAL UTILITY DISTRICT	TRENCH WITH PAVED SURFACE		
	DATE: 07/26/2010	REVISIONS:	STANDARD NO. WA-4



REINFORCEMENT SHALL BE PROVIDED AS FOLLOWS:
6" – 12" PIPE – (1)NUMBER 5
14" – 30" (PIPE –(2)NUMBER 5'S
36"– 48" PIPE –(3) NUMBER 7'S

VERTICAL DOWN BEND

TABLE A
UPWARD THRUST GRAVITY BLOCKS

PIPE DIA.	MIN. TOP WIDTH W1	ANGLE (degrees)	BOTTOM WIDTH–W2 (in)
6"	6"	0–5	NOTE 2
		5–15	24
		15–25	48
		≈ 25	NOTE 1
8"	6"	0–5	NOTE 2
		5–9	30
		9–15	36
		≈ 15	NOTE 1
12"	6"	0–5	NOTE 2
		5–15	48
		≈ 15	NOTE 1
16"	12"	0–5	NOTE 2
		5–10	60
		10–15	96
		≈ 15	NOTE 1
24" THRU 36"		≈ 5.0	NOTE 1
42" THRU 48"		≈ 3.0	NOTE 1

NOTES:

1. FOR ANGLES GREATER THAN THOSE INDICATED RESTRAINT JOINTS SHALL BE INSTALLED
2. FOR JOINT DEFLECTIONS LESS THAN 5 DEGREES, NO HORIZONTAL OR VERTICAL THRUST RESTRAINT IS REQUIRED FOR PIPES LESS THAN 42" IN DIAMETER.

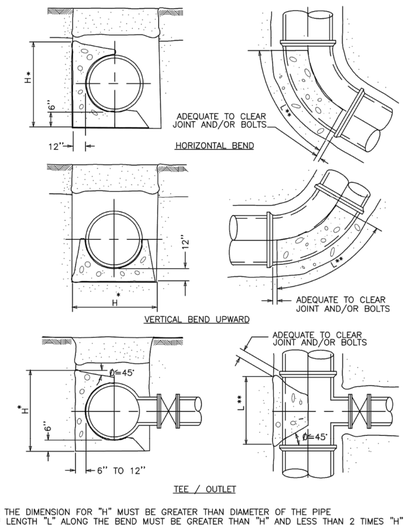
THRUST BLOCK DESIGN AS FOLLOWS
A. PRESSURE OF 150 P.S.I. (ACTUAL IF HIGHER) + 50 % SURGE ALLOWANCE
B. MAXIMIM SOIL BEARING SEE TABLE BELOW

SOIL TYPES	PRESSURE
LOOSE OR SPONGY SOIL	1500 Lb/Sq.Ft.
UNDISTURBED SOIL, CALICHE	2000 Lb/Sq.Ft.
LIMESTONE ROCK	4000 Lb/Sq.Ft.

NOTES:

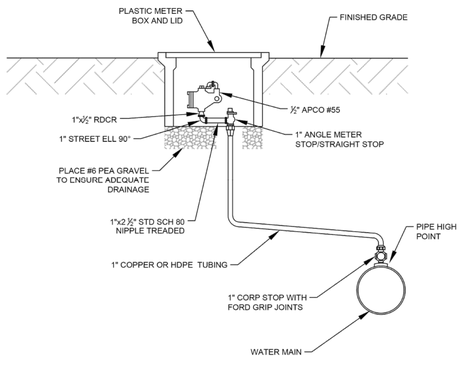
1. THE EARTH BEARING SURFACE SHALL BE UNDISTURBED MATERIAL, IF NOT POSSIBLE, THE FILL BETWEEN THE BEARING SURFACE AND THE UNDISTURBED SOIL MUST BE COMPACTED TO TO A MINIMUM OF 90% STANDARD PROCTOR DENSITY.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTALL ADEQUATE THRUST BLOCKING. THE CONTRACTOR SHALL MAKE THE DETERMINATION IN THE FIELD AS TO TYPE OF SOIL AND USE THE "THRUST BLOCKING DESIGN" TO ADJUST THE AMOUNTS OF THRUST BLOCKING REQUIRED AT EACH PLACE OF USE.
3. ALL FITTINGS SHALL BE BLOCKED REGARDLESS OF THE ANGLE OF DIRECTION.
4. ALL JOINTS WITHIN 30' OF BEND MUST BE RESTRAINED.

SPRINGS HILL SPECIAL UTILITY DISTRICT	THRUST BLOCK DETAILS SHT 1 OF 2		
	DATE: 03/03/2010	REVISIONS:	STANDARD NO. WA-6



* THE DIMENSION FOR "H" MUST BE GREATER THAN DIAMETER OF THE PIPE
** LENGTH "L" ALONG THE BEND MUST BE GREATER THAN "H" AND LESS THAN 2 TIMES "H"

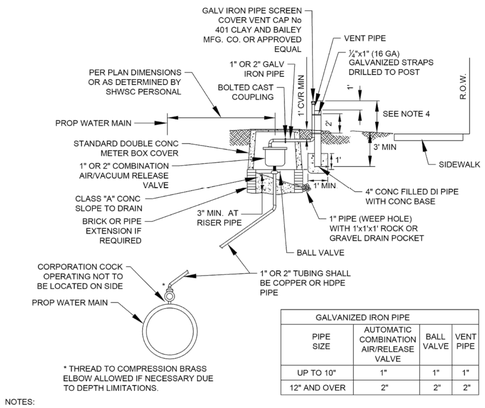
SPRINGS HILL SPECIAL UTILITY DISTRICT	THRUST BLOCK DETAILS SHT 2 OF 2		
	DATE: 03/03/2010	REVISIONS:	STANDARD NO. WA-6



NOTES:

1. ALL CORPS AND ANGLE STOPS TO BE LEFT OPEN.
2. BLOW OFF MAIN BEFORE INSTALLING AIR VALVE.

SPRINGS HILL SPECIAL UTILITY DISTRICT	STANDARD 1/2" AIR RELEASE VALVE INSTALLATION		
	DATE: 07/26/2010	REVISIONS: 03/15/2022	STANDARD NO. WA-8



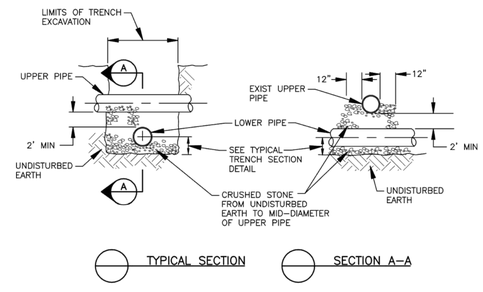
* THREAD TO COMPRESSION BRASS ELBOW ALLOWED IF NECESSARY DUE TO DEPTH LIMITATIONS.

GALVANIZED IRON PIPE			
PIPE SIZE	AUTOMATIC COMBINATION AIR/RELEASE VALVE	BALL VALVE	VENT PIPE
UP TO 10"	1"	1"	1"
12" AND OVER	2"	2"	2"

NOTES:

1. EXTERIOR SURFACES OF EXPOSED AIR VENT PIPE AND D.I. SUPPORT PIPE SHALL BE PAINTED WITH RUST-OLEUM ACRYLIC 5225 (SAFETY BLUE), OR EQUAL, PER COATING MANUFACTURER INSTRUCTIONS PRIOR TO INSTALLATION.
2. AIR VENT PIPE INSTALLATION SHALL BE AS NEAR AS PRACTICAL TO RIGHT-OF-WAY LINE OR EASEMENT LINE AS INDICATED ON PLANS (VERIFY LOCATION WITH SHSUD PERSONNEL
3. CONCRETE METER BOX PENETRATION SHALL BE CORE BIT DRILLED. VOID SHALL BE FILLED BY PRESS-SEAL GASKET CORP. PSX RESILIENT CONNECTOR MEETING ASTM C923 OR APPROVED EQUAL.
4. IN UNDEVELOPED AND DEVELOPED AREAS, THE AIR RELEASE SHALL BE 5 FEET IN HEIGHT SUPPORTED BY 4" STEEL PIPE WHICH HAS BEEN PAINTED BLUE AND FILLED WITH CONCRETE. IN DEVELOPED AREAS THE AIR RELEASE SHALL BE 8" TO 12" IN HEIGHT AND LOCATED NOT TO CONFLICT WITH SIDEWALK.
5. AUTOMATIC COMBINATION AIR/VACUUM VALVE SHALL BE INSTALLED IN A MANNER WHICH WILL ALLOW REMOVAL OF ASSEMBLY WITHOUT REMOVAL OF THE CONCRETE METER BOX.

SPRINGS HILL SPECIAL UTILITY DISTRICT	1" OR 2" VENTED AUTOMATIC COMBINATION AIR/VACUUM RELEASE VALVE		
	DATE: 06/15/2010	REVISIONS: 03/15/2022	STANDARD NO. WA-9



NOTES:

1. T.C.E.Q. RULES AND REGULATIONS ON SANITARY SEWER, STORM SEWER AND WATER MAIN CROSSINGS AND SEPARATIONS SHALL BE STRICTLY ENFORCED, 30 TAC CHAPTER 290, SUBCHAPTER D.
2. ALL OTHER UTILITIES TO MAINTAIN 5 FOOT SEPARATION FROM WATER MAINS AND SERVICES, GAS, ELECTRIC, CABLE (ETC.) TO BE LOCATED OPPOSITE SIDES OF PROPERTY.
3. UTILITY CROSSINGS SEPARATED BY LESS THAN 12 INCHES, PIPES SHALL BE ENCASED WITH 6 INCHES OF CONCRETE ALL AROUND AND CENTERED TO CROSSING FOR A MINIMUM LENGTH OF 20 FEET TOTAL.
4. SPECIFICATIONS, BEDDING MATERIAL MUST BE APPROVED BY AUTHORIZED SHSUD PERSONNEL, BEFORE START OF JOB.
5. AT ANY CREEK CROSSING THE MAIN SHALL BE STEEL ENCASED AND/OR 6" CONCRETE ENCASEMENT TO WITHIN 10 FEET OUTSIDE OF CREEK OR DRAINAGE DITCH AREA.

SPRINGS HILL SPECIAL UTILITY DISTRICT	UTILITY CROSSING		
	DATE: 06/15/2010	REVISIONS:	STANDARD NO. WA-7

CUDEENGINEERS.COM
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PARK HOUSE UNIT 1

WATER DISTRIBUTION STANDARD DETAILS

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1 2 3 4 5 6 7 8

CUDE ENGINEERS
TBPELS No. 10048500

C5.D1

C:\04154\00\13-DWG\4-Sheets\C5.D1 WATER DISTRIBUTION STANDARD DETAILS.dwg, 2025/08/07 1:13pm, sgonzales

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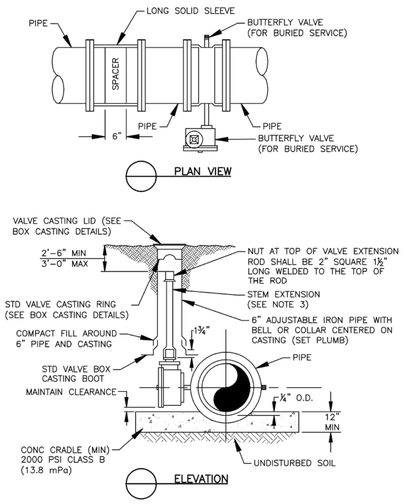
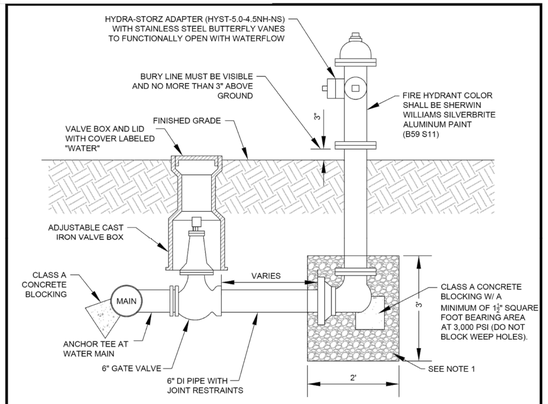


NOTES:

1. WELD SOCKET 2⅜"x1¼" DEEP TO 1⅛" SOLID ROUND STEM EXTENSION.
2. SPRINGS HILL SPECIAL UTILITY DISTRICT (SHSUD) STANDARD VALVE CASING RING AND LID. (TRAFFIC BEARING IN PAVED AREAS).
3. VALVE EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 3 FEET DEEP FROM FINISHED GRADE. VALVE EXTENSIONS SHALL BE PLACED SUCH THAT THE EXTENSION WITH BOX ASSEMBLY IS NOT BETWEEN 18 TO 24 INCHES FROM FINISHED GRADE.

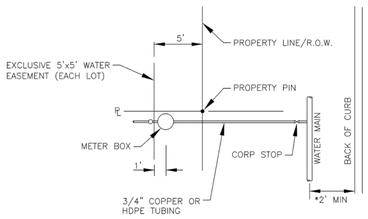
SPRINGS HILL SPECIAL UTILITY DISTRICT	36" AND UP BUTTERFLY VALVE WITH BOX ASSEMBLY		
	DATE: 06/15/2010	REVISIONS:	STANDARD NO. WA-20



NOTES:

1. A MINIMUM OF 2 CUBIC FEET OF 1" TO 2" CLEAN, ASTM C-33 CRUSHED STONE #67 SHALL BE PLACED AROUND THE BOTTOM OF THE HYDRANT FOR A RADIUS OF AT LEAST 10" AND EXTEND 10" ABOVE THE OUTLET. DO NOT BLOCK DRAIN HOLES.
2. ALL PIPE JOINTS SHALL BE KEPT FREE FROM CONCRETE.
3. ALL FITTINGS AND FITTING JOINTS MUST BE WRAPPED WITH THREE LAYERS OF 8-MIL POLYETHYLENE IN ACCORDANCE WITH AWWA C105-10, OR LATEST VERSIONS THERE OF.
4. POLYWRAP SHALL BE SECURED WITH A MINIMUM OF THREE CIRCUMFERENTIAL TURNS OF POLYTAPE.
5. THE FIRE HYDRANT SHALL BE PLACED A MINIMUM OF 5 FEET FROM ALL OBSTRUCTIONS.
6. ALL NEW FIRE HYDRANTS SHALL BE MARKED WITH A FOUR-INCH BY FOUR-INCH BY THREE-FOURTHS-INCH TALL, BLUE REFLECTIVE PAVEMENT MARKER (BLUE REFLECTIVE EYE) LOCATED THREE FEET OFF-CENTER OF THE STREET TOWARDS THE HYDRANT. ALL MARKERS MUST BE APPROVED BY FIRE AND UTILITIES DEPARTMENT.
7. FIRE FLOW SHALL BE TESTED WITH THE FLOWS AND PRESSURES PROVIDED TO SHSUD
8. ALL VALVES AND FIRE HYDRANTS SHALL BE LOCATED BY GPS AND PROVIDED TO SHSUD IN TEXAS STATE PLANE COORDINATES, NAD 83 (93) SOUTH CENTRAL ZONE.
9. INSTALL ONE INLINE GATE VALVE AT EACH SIDE OF TEE THAT CONNECTS FIRE HYDRANT ASSEMBLY TO WATER MAIN.

SPRINGS HILL SPECIAL UTILITY DISTRICT	STANDARD FIRE HYDRANT INSTALLATION		
	DATE: 8/20/2021	REVISIONS:	STANDARD NO. WA-21

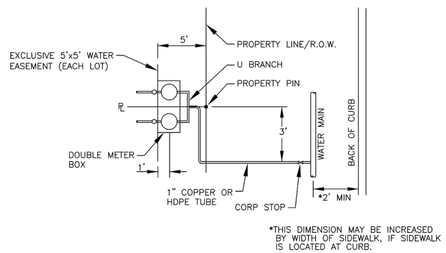


*THIS DIMENSION MAY BE INCREASED BY WIDTH OF SIDEWALK, IF SIDEWALK IS LOCATED AT CURB.

NOTES:

1. INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH INFORMATION SHOWN ON APPLICABLE STANDARD DRAWINGS AND WILL BE INSPECTED BY SHSUD CONSTRUCTION INSPECTION PERSONNEL.
2. CUSTOMER ALSO INSTALLS WATER LINES INCLUDING FITTINGS AND VALVES ON BOTH SIDES OF METER, INSTALL METER BOXES AND COVERS. ALL IN ACCORDANCE WITH INFORMATION ON APPLICABLE STANDARD DRAWING. A VENTED SPACER MAY BE USED TO ASSURE PROPER SPACING AND ALIGNMENT OF METER FITTINGS.
3. CUSTOMER IS RESPONSIBLE FOR METER BOX AND PIPING SYSTEM UNTIL METER IS INSTALLED AND WATER IS CONNECTED. ANY MISSING OR DAMAGED PARTS SHALL BE REINSTALLED BY CUSTOMER WHO SHALL GUARANTEE, FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE, THAT CONNECTIONS TO SHSUD SYSTEMS ARE FREE FROM DEFECTS IN WORKMANSHIP OR MATERIAL. CUSTOMER ALSO HAS THE RESPONSIBILITY TO ASSURE THAT ALL VALVES AND STOPS, METER BOX AND REMAIN CLEAR OF SIDEWALKS AND OTHER OBSTRUCTIONS.
4. SHSUD ACTIVITY IS LIMITED TO INSTALLATION OF THE WATER METER AND INSPECTION OF CONNECTIONS TO SHSUD WATER SYSTEMS. FOR MAINTENANCE PURPOSES, SHSUD , RESPONSIBILITY ENDS AT THE CUSTOMER'S WATER CUT-OFF VALVE.
5. NO METER BOX SHALL BE SET IN SIDEWALK OR DRIVEWAY AREA WITHOUT WRITTEN APPROVAL FROM SHSUD .
6. PIPING AND TUBING IN STREET RIGHT-OF-WAY AND IN EASEMENT AREA SHALL BE BEDDED IN GRANULAR MATERIAL AS REQUIRED IN THE SPECIFICATIONS. SERVICE LINES SHALL HAVE A MINIMUM COVER BELOW FINAL GRADE OF 42-INCHES.

SPRINGS HILL SPECIAL UTILITY DISTRICT	SINGLE WATER SERVICE CONNECTION		
	DATE: 06/16/2010	REVISIONS: 03/15/2022	STANDARD NO. WA-22



*THIS DIMENSION MAY BE INCREASED BY WIDTH OF SIDEWALK, IF SIDEWALK IS LOCATED AT CURB.

NOTES:

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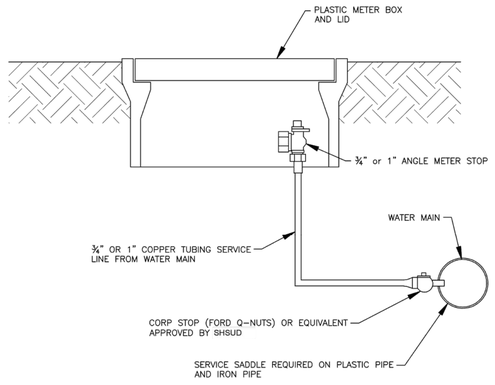
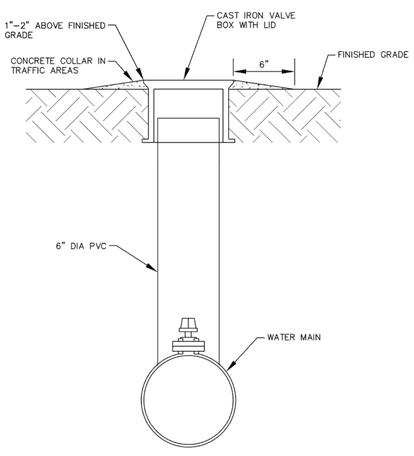
5. NO METER BOX SHALL BE SET IN SIDEWALK OR DRIVEWAY AREA WITHOUT WRITTEN APPROVAL FROM SHSUD
6. PIPING AND TUBING IN STREET RIGHT-OF-WAY AND IN EASEMENT AREA SHALL BE BEDDED IN GRANULAR MATERIAL AS REQUIRED IN THE SPECIFICATIONS. SERVICE LINES SHALL HAVE A MINIMUM COVER BELOW FINAL GRADE OF 42 INCHES.

SPRINGS HILL SPECIAL UTILITY DISTRICT	DOUBLE WATER SERVICE CONNECTION		
	DATE: 07/23/2010	REVISIONS: 03/15/2022	STANDARD NO. WA-23



SPRINGS HILL SPECIAL UTILITY DISTRICT	3/4" AND 1" SERVICE INSTALLATION		
	DATE: 11/24/2009	REVISIONS:	STANDARD NO. WA-24



SPRINGS HILL SPECIAL UTILITY DISTRICT	STANDARD VALVE BOX INSTALLATION		
	DATE: 11/24/2009	REVISIONS:	STANDARD NO. WA-27

CUDEENGINEERS.COM
CUDE ENGINEERS EST. 1980
1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE UNIT 1

WATER DISTRIBUTION STANDARD DETAILS

DATE 08/07/2025
PROJECT NO. 04154-000
DRAWN BY SG/JVA
CHECKED BY JL/AC

REVISIONS
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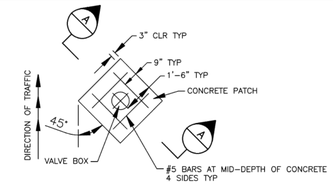
CUDE ENGINEERS
TBPELS No. 10048500

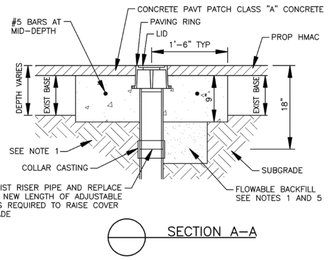
C5.D2

B:\04154\001\2-DWG\4-Plans\C5.D2 WATER DISTRIBUTION STANDARD DETAILS.dwg 2025/08/07 1:33pm sgonzales

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



PLAN VIEW

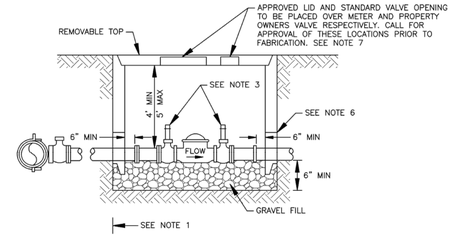


SECTION A–A

NOTES:

1. SUBGRADE SHALL BE COMPACTED AS PER SPECIFICATIONS, SUBGRADE PREPARATION.
2. VALVE CASTINGS SHALL BE ADJUSTED TO GRADE AFTER FINAL LIFT OF OVERLAY IS IN PLACE.
3. CLEAN VALVE BOX OF ALL DEBRIS DOWN TO THE BASE OF THE VALVE.
4. REMOVE EXISTING RISER PIPE DOWN 18" AND REPLACE TO THE NEW ELEVATION USING NEW ADJUSTABLE PIPE AND A CASTING.
5. WHERE CAST IRON CASTINGS TO BE REMOVED REQUIRE EXCAVATION GREATER THAN 20" DEEP. CONTRACTOR MAY ELECT TO FILL EXCAVATION WITH CONTROLLED LOW STRENGTH MATERIAL TO THE UNDERSIDE OF THE CONCRETE PAVEMENT PATCH IN LIEU OF COMPACTED BACKFILL.
6. REINFORCING STEEL SHALL MEET SPECIFICATIONS FOR REINFORCING STEEL.

SPRINGS HILL SPECIAL UTILITY DISTRICT	VALVE BOX TO GRADE WITH CONCRETE AND HOT MIX ASPHALT CONCRETE		
	DATE: 08/12/2010	REVISIONS:	STANDARD NO. WA–29



SPRINGS HILL SPECIAL UTILITY DISTRICT	INSTALLATION DETAILS FOR 3", 4" AND 6" COMPOUND METERS SHEET 1 OF 2		
	DATE: 07/26/2010	REVISIONS:	STANDARD NO. WA–30

MATERIALS:

A. APPROVED TAPPING SLEEVE

B. TAPPING VALVE (GATE) IRON BODY WITH M.J. OUTLET

C. DUCTILE IRON OR CAST IRON PIPE NOT LESS THAN 4" DIAMETER

D. TAPPED CAST IRON TEE – M.J. x SPIGOT

*E. COPPER TO MALE IRON PIPE QUARTER BEND COUPLINGS.

F. 2" COPPER PIPE

G. COPPER TO MALE IRON PIPE FITTING

H. 2" BRASS BALL VALVE

I. SHUT OFF VALVE (GATE) CAST IRON MIN 4" FLANGED x M.J.

*J. CUSTOMER'S VALVE (GATE) CAST IRON FLANGED

*K. TAPPED CAST IRON TEE

L. METER ON 2" COPPER BY–PASS LINE

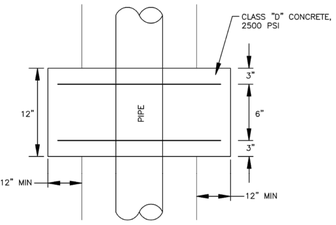
* VALVE AND FITTING TO BE FURNISHED AND INSTALLED BY CUSTOMER.

ITEMS D & K MAY BE LOCATED OUTSIDE THE BOX

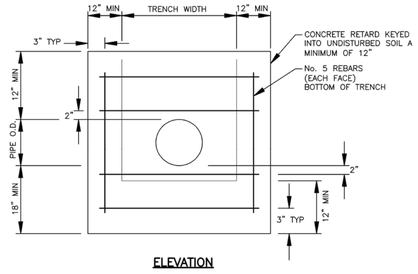
NOTES:

1. BOX MUST BE BEHIND CURB AND/OR WALK AND OUT OF VEHICULAR TRAFFIC.
2. PIPE AND FITTINGS TO BE DUCTILE IRON OR CAST IRON EXCEPT AS NOTED. NO PLASTIC PIPE. NO SOLDERED JOINTS.
3. NO RISING STEM OR WHEEL OPERATED VALVES EXCEPT ON 2" BY–PASS VALVES.
4. ROD RESTRAINT IS REQUIRED AT ALL MECHANICAL OR PUSH ON TYPE JOINTS.
5. TOP OF BOX MUST BE 1" ABOVE GROUND OR FLUSH WITH PAVEMENT SURFACE.
6. METER BOX TO BE SET AFTER METER IS INSTALLED. SIDE NOTCHES IN BOX TO BE FILLED WITH MORTAR AFTER INSTALLATION OF PIPE.
7. CONTACT SHSUD FOR METER LENGTH, APPROVED TYPE OF LID AND LOCATION OF OPENINGS IN TOP OF BOX.
8. ANY WORK BY CUSTOMER ON THE CITY SIDE OF THE METER REQUIRES PLANS BY A TEXAS REGISTERED/LICENSED PROFESSIONAL ENGINEER.
9. WHERE THERE IS A LOOPED SYSTEM WITH MORE THAN ONE METER, APPROVED CHECK VALVES SHALL BE INSTALLED DOWNSTREAM OF THE PROPERTY OWNERS GATE VALVE (J) AT EACH METER. BACKFLOW PREVENTERS MAY BE REQUIRED WITHIN THE SYSTEM BY THE BUILDING INSPECTION DEPARTMENT.

SPRINGS HILL SPECIAL UTILITY DISTRICT	INSTALLATION DETAILS FOR 3", 4" AND 6" COMPOUND METERS SHEET 2 OF 2		
	DATE: 07/26/2010	REVISIONS:	STANDARD NO. WA–30



TOP VIEW

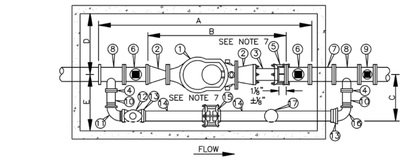


ELEVATION

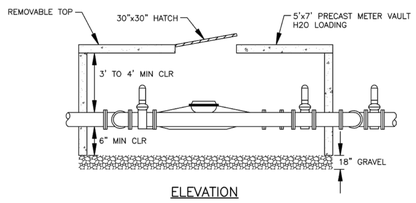
NOTE:

1. RETARDS ARE TO BE USED AT ALL GRADES 10 PERCENT OR OVER. (MINIMUM 20 FOOT SPACING)

SPRINGS HILL SPECIAL UTILITY DISTRICT	CONCRETE RETARD		
	DATE: 07/26/2010	REVISIONS:	STANDARD NO. WA–33



PLAN VIEW



ELEVATION

No	NAME	LENGTH
A	OVERALL LENGTH	76"
B	METER + SPOOL + FCA	44½"
C	CENTERLINE OF MAIN TO OUTSIDE OF BYPASS	15"
D	CENTERLINE OF MAIN TO INSIDE OF VAULT	30"
E	CENTERLINE OF MAIN TO INSIDE OF VAULT	30"

SPRINGS HILL SPECIAL UTILITY DISTRICT	3" METER INSTALATION SHT 1 OF 2		
	DATE: 08/12/2010	REVISIONS:	STANDARD NO. WA–38

No	NAME	LENGTH
1	3" METER	*17"
2	4"x3" FLANGED REDUCER	7"
3	4" FLANGED x PLAIN END	12"
4	4" COMPANION FLANGE	
5	4" FLANGED COUPLING ADAPTER	5"
6	4" GATE VALVE SQUARE NUT	9"
7	4" FLANGED SPOOL	12" MIN
8	4"x4"x2" FLANGED TEE	13"
9	PROPERTY OWNER'S 4" GATE VALVE SQUARE NUT	9"
10	2"x8" BRASS NIPPLE	8"
11	2" STREET ELBOW 90°	
12	2" BRASS GATE VALVE	
13	COPPER TO IRON PIPE FITTING	
14	2" COPPER OR BRASS PIPE	
15	2" COUPLING	
16	2" ELBOW 90° BRASS	
17	BYPASS METER (SIZE PER SHWSC)	

* DIMENSIONS SUBJECT TO CHANGE. CHECK WITH INSPECTOR

NOTES:

1. PIPE AND METER SIZE SHALL BE AS DETERMINED BY OWNER. APPROVAL BY SHSUD AND FIRE DEPARTMENT. PLANS MUST BE PREPARED BY A LICENSED ENGINEER IF INSTALLATION IN RIGHT–OF–WAY IS BY OTHER THAN CITY FORCES.
2. METER VAULT MUST BE BEHIND CURB AND/OR WALK AND OUT OF VEHICULAR TRAFFIC.
3. MAIN LINE AND BYPASS VALVES WILL BE RESILIENT SEAT TYPE WITH CORROSION RESISTANT FUSION BANDED EPOXY COATING INSIDE AND OUTSIDE, NON–RISING STEM. MAIN LINE VALVES SHALL HAVE SQUARE OPERATING NUTS. BYPASS VALVE WILL HAVE A HANDWHEEL. PROPERTY OWNER'S VALVE MUST BE LOCATED OUTSIDE THE SHSUD METER VAULT.
4. APPROVAL WILL BE NEEDED IF HEIGHT OF VAULT EXCEEDS 72". METER MUST BE MODIFIED TO READ FROM TOP OF VAULT.
5. HATCH OPENING WILL BE 30"x30".
6. IRON PIPE TAPPING SLEEVE IN STREET RIGHT–OF–WAY SHALL BE IMBEDDED IN GRANULAR MATERIALS AS REQUIRED BY SHSUD STANDARD SPECIFICATIONS. BACKFILL ABOVE GRANULAR BEDDING AS REQUIRED.
7. DOUBLE HARNESS MJ WITH TIE RODS. ALL OTHER FITTINGS INSIDE VAULT WILL BE FLANGED.
8. CONTACT SHSUD OFFICE PRIOR TO INSTALLATION OF COMPOUND METERS FOR PROPER DOMESTIC DEMANDS.
9. NOTCHES WHERE PIPING GOES THROUGH VAULT SHALL BE FILLED WITH MORTAR.
10. THE TOP OF THE METER VAULT SHALL BE AT AN ELEVATION SUCH THAT THE SURROUNDING GROUND SLOPES AWAY FROM THE VAULT.

SPRINGS HILL SPECIAL UTILITY DISTRICT	3" METER INSTALATION SHT 2 OF 2		
	DATE: 08/12/2010	REVISIONS:	STANDARD NO. WA–36

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PARK HOUSE UNIT 1

WATER DISTRIBUTION STANDARD DETAILS

DATE
08/07/2025

PROJECT NO.
04154-000

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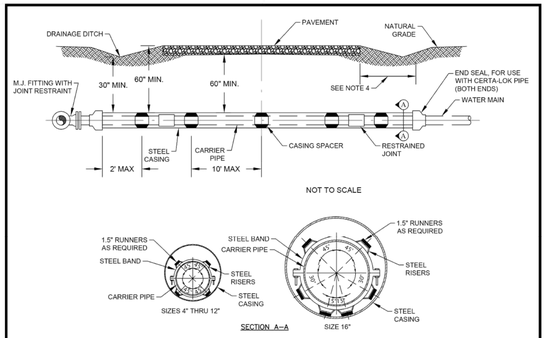
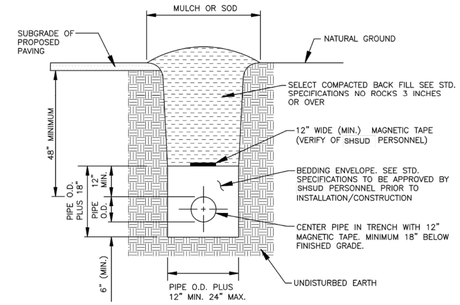


CARRIER PIPE			STEEL CASING					CASING SPACERS	
NOMINAL SIZE (IN)	PIPE OUTSIDE DIAMETER (IN)	RESTRAINT OUTSIDE DIA. (IN)	MIN. NOMINAL SIZE(IN)	OUTSIDE DIAMETER (IN)	INSIDE DIAMETER (IN)	WALL THICKNESS (IN)	WEIGHT CLASS	BAND WIDTH	No. OF RUNNERS PER TIE
4	4.80	9.25	10	10.750	10.25	0.25	STANDARD	8"	2 TOP, 2 BOTTOM
6	6.90	11.25	12	12.750	12.250	0.375	STANDARD	8"	2 TOP, 2 BOTTOM
8	9.05	14.75	16	16.000	13.150	0.375	STANDARD	8"	2 TOP, 2 BOTTOM
12	13.20	16.90	20	20.000	19.150	0.375	STANDARD	8"	2 TOP, 2 BOTTOM
16	17.40	25.51	30	30.000	29.250	0.375	STANDARD	8"	2 TOP, 4 BOTTOM

NOTES:

1. CARRIER PIPE SIZES ARE BASED ON CERTA-LOK C900/RJ FOR 4" TO 12" PIPE DIAMETER AND CERTA-LOK C905/RJ FOR 14" TO 24" PIPE DIAMETER.
2. STEEL CASING SHALL BE STANDARD WEIGHT OR HEAVIER PIPE CONFORMING TO ASTM A-36, ASTM A-568, ASTM A-135, ASTM A-139 OR OTHER ACCEPTABLE STANDARD SPECIFICATION. PIPE SHALL BE COATED AND LINED IN ACCORDANCE WITH AWWA C-210 OR APPROVED EQUAL. PIPE JOINTS SHALL BE WELDED IN ACCORDANCE WITH AWWA C-206. STEEL CASING SHALL BE NEW OR USED IN GOOD CONDITION ACCEPTABLE TO SPRINGS HILL WATER SUPPLY CORPORATION AND TO THE ROADWAY AUTHORITY.
3. SUBSEQUENT CASING SPACERS ARE REQUIRED FOR 4" TO 14" PIPE SIZES TO BE AT 10 FEET APART AND FOR 16" TO 30" PIPE SIZES TO BE AT 8 FEET APART WITHIN THE CASING WITH AT LEAST 3 SPACERS PER JOINT ON PIPE. ONE CASING SPACER SHALL BE REPLACED WITHIN 2 FEET OF ENDS OF CASING FOR ALL PIPE SIZES.
4. CASING PIPE SHALL EXTEND A MINIMUM OF 10 FT. PAST EDGE OF PAVEMENT ALONG TXDOT ROADWAYS AND A MINIMUM OF 5 FT. PAST EDGE OF PAVEMENT ALONG ALL OTHER ROADWAYS UNLESS OTHERWISE DIRECTED BY ENGINEER OR REGULATORY AUTHORITY.
5. CASING SPACERS SHALL BE MADE FROM T-304 STEEL OF A MINIMUM 14 GAUGE THICKNESS.
6. CASING SPACERS SHALL HAVE A SYNTHETIC RUBBER OR PVC LINER TO INSULATE THE PIPELINE FROM THE SPACER.
7. CASING SPACERS SHALL HAVE A 1.5" WIDE GLASS REINFORCED PLASTIC OR UHMW POLYMER RUNNERS TO INSULATE THE SPACER FROM THE CASING

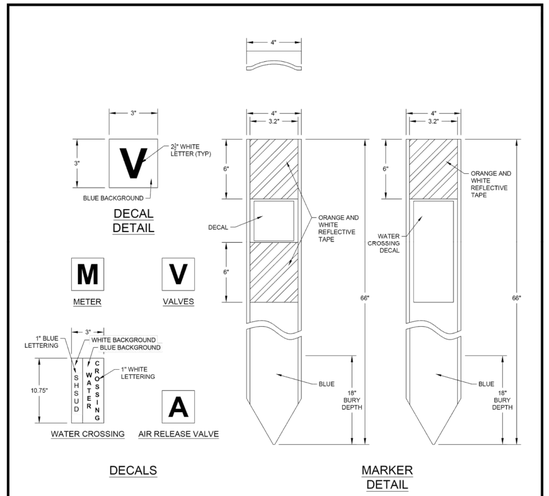
SPRINGS HILL SPECIAL UTILITY DISTRICT	CASING DETAIL		
	DATE: 03/03/2010	REVISIONS: 07/22/2021	STANDARD NO. WA–1



NOTES:

1. ALL WATER LINES SHALL HAVE A MINIMUM PRESSURE CLASS OF 200 P.S.I.
2. BEDDING AND BACKFILL SHALL BE COMPACTED TO 90% STANDARD PROCTOR

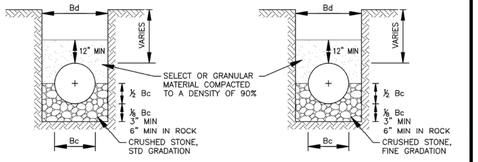
SPRINGS HILL SPECIAL UTILITY DISTRICT	TRENCH WITH UNFINISHED SURFACE		
	DATE: 03/03/2010	REVISIONS:	STANDARD NO. WA–5

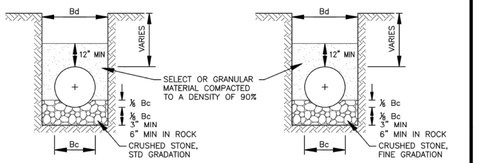


NOTES:

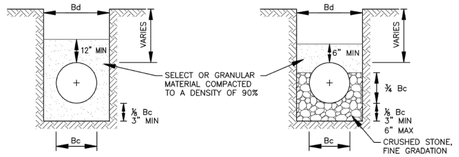
1. MARKERS SHALL BE 66" COMPOSITE POSTS SIMILAR TO RHINO FIBERCURVE COMPOSITE MARKER POST.
2. MARKERS SHALL BE PLACED AT ALL GATE VALVES, FLUSHING VALVES, & AIR RELEASE VALVES PER ITEM DETAIL.
3. MARKERS SHALL BE PLACED AT WATER METERS AS SPECIFIED ON PLANS
4. PIPELINE MARKERS SHALL BE PLACED ON R.O.W./FENCE LINE AT ALL ROAD CROSSINGS.

SPRINGS HILL SPECIAL UTILITY DISTRICT	WATER LINE MARKER		
	DATE: 07/26/2010	REVISIONS: 08/05/2021	STANDARD NO. WA-34





SPRINGS HILL SPECIAL UTILITY DISTRICT	EMBEDMENT SHT 1 OF 3		
	DATE: 08/12/2010	REVISIONS:	STANDARD NO. WA–41



EMBEDMENT FOR WATER LINES						
TYPE OF PIPE	IN EARTH			IN ROCK		
	0'–8'	8'–16'	>16'	0'–8'	8'–16'	>16'
18" AND SMALLER DUCTILE IRON WATER LINE	D+	C	C	D+	C	B
18" AND LARGER DUCTILE IRON WATER LINE	D+	B	B	D+	B	B
ALL PVC WATER LINE	C+	B+	B+	C+	B+	B+
24" & 30" RCCP	D+	B	B	D+	B	B

NOTES:

1. PIPE EMBEDMENT SHALL CONFORM TO DETAILS SHOWN HEREIN.
2. SECONDARY BACKFILL SHALL EXTEND FROM ABOVE THE EMBEDMENT TO BELOW THE PAVEMENT REPAIR SECTION WITHIN PAVEMENT AREA AND TO BELOW THE TOPSOIL SECTION OUTSIDE PAVEMENT AREAS.
3. SECONDARY BACKFILL SHALL CONSIST OF SELECT MATERIAL INCLUDING GRAVEL, FINE ROCK CUTTINGS, SAND, SANDY LOAM, OR LOAM FREE FROM EXCESSIVE CLAY. ROCK CUTTINGS SHALL HAVE NO DIMENSION GREATER THAN TWO INCHES. TRENCH CUTTINGS MAY BE UTILIZED AS SELECT MATERIAL PROVIDED THE CONDITIONS OF THIS PARAGRAPH ARE MET.
4. SECONDARY BACKFILL SHALL BE MECHANICALLY COMPACTED TO 95% STANDARD PROCTOR DENSITY WITHIN PAVEMENT AREAS AND TO 90% STANDARD PROCTOR DENSITY OUTSIDE PAVEMENT AREAS.

SPRINGS HILL SPECIAL UTILITY DISTRICT	EMBEDMENT SHT 2 OF 3		
	DATE: 08/12/2010	REVISIONS:	STANDARD NO. WA–41

EMBEDMENT DIMENSIONS			
PIPE DIAMETER (INCHES)	KIND OF PIPE	EXTERNAL DIAMETER Bc (INCHES)	TRENCH WIDTH Bd (INCHES)
6	PVC WATER	6.90	24
6	DI WATER	6.90	24
8	PVC WATER	9.05	25
8	DI WATER	9.05	25
8	PVC	8.40	25
12	PVC WATER	13.20	29
12	DI WATER	13.20	29
12	PVC	12.40	29
16	DI WATER	17.40	33
16	PVC WATER	17.40	33
18	DI WATER	19.50	36
18	PVC WATER	19.50	36
20	DI WATER	21.60	38
20	PVC WATER	21.60	38
24	PVC WATER	25.80	42
24	DI WATER	25.80	42
24	RCCP WATER	30.00	48
30	PVC WATER	32.00	48
30	DI WATER	32.00	48
30	RCCP WATER	32.00	48

NOTES:

1. RCCP = REINFORCED CONCRETE CYLINDER PIPE.
2. EMBEDMENT DIMENSION FOR HDPE PIPE SHALL BE IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATIONS.

SPRINGS HILL SPECIAL UTILITY DISTRICT	EMBEDMENT SHT 3 OF 3		
	DATE: 08/12/2010	REVISIONS:	STANDARD NO. WA–41

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PARK HOUSE UNIT 1

WATER DISTRIBUTION STANDARD DETAILS

DATE 08/07/2025

PROJECT NO. 04154-000

DRAWN BY SG/JVA

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C5.D4

S:\04154\001\2-DWG\4-Plans\C5.D3 WATER DISTRIBUTION STANDARD DETAILS.dwg, 2025/08/07 1:33pm, sgonzales

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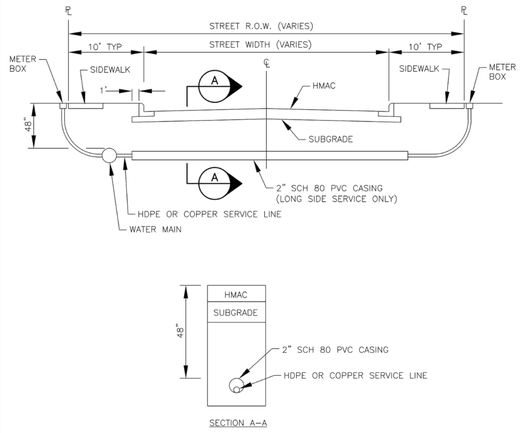
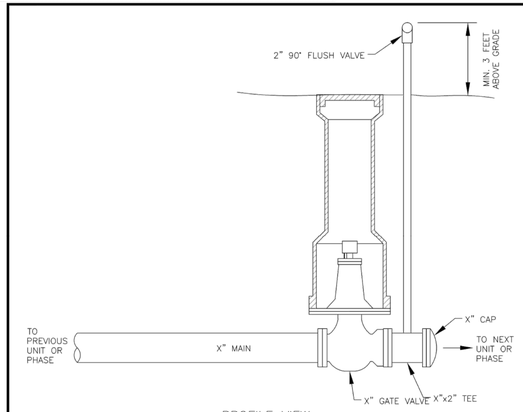


SECTION A–A

SPRINGS HILL SPECIAL UTILITY DISTRICT	P.E. WATER SERVICE CASING		
	DATE: 07/26/2010	REVISIONS: 03/15/2022	STANDARD NO. WA–35



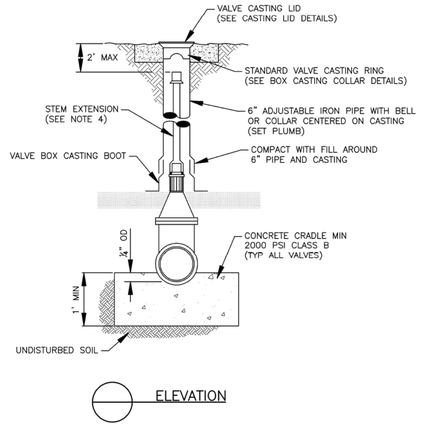
PROFILE VIEW

PLAN VIEW

NOTE:
1. BURIED PIPING, FITTINGS, AND FITTINGS JOINTS SHALL BE WRAPPED IN POLYWRAP.
2. THE EARTHBEARING SURFACE SHALL BE THE UNDISTURBED TRENCH WALL.
3. ALL PIPE JOINTS SHALL BE KEPT FREE FROM CONCRETE.
4. POLYWRAP SHALL BE SECURED WITH A MINIMUM OF THREE CIRCUMFERENTIAL TURNS OF POLY TAPE.

NOT TO SCALE

SPRINGS HILL SPECIAL UTILITY DISTRICT	TEMPORARY BLOW OFF 8–INCH OR SMALLER		
	DATE: 10/21/2021	REVISIONS:	STANDARD NO. WA-46



ELEVATION

NOTES:

1. WELD SOCKET 2½" X 2" DEEP TO 1" (SCH. 40) ROUND STEM EXTENSION. FITTED ON OPERATING NUT, SCH. 80 FOR LENGTHS OVER 10'.
2. STANDARD VALVE CASTING RING AND METAL LID IN UNPAVED AREAS.
3. NUT AT TOP OF VALVE EXTENSION ROD SHALL BE SQUARE 2" LONG WELDED TO TOP OF ROD.
4. VALVE EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 3 FEET DEEP FROM FINISHED GRADE. VALVE EXTENSIONS SHALL BE PLACED SUCH THAT THE EXTENSION NUT IS BETWEEN 18 TO 24 INCHES FROM FINISHED GRADE.

SPRINGS HILL SPECIAL UTILITY DISTRICT	4" TO 24" VERTICAL GATE VALVE WITH BOX ASSEMBLY		
	DATE: 06/15/2010	REVISIONS:	STANDARD NO. WA–19

JOINT RESTRAINT DIMENSION TABLE *

TYPE	MAIN SIZES	RESTRAINT LENGTH(S)
TEE	12" x 12"	152' ALONG BRANCH OF TEE
TEE	8" x 8"	81' ALONG BRANCH OF TEE
DEAD END / IN–LINE VALVE	12"	157'
DEAD END / IN–LINE VALVE	8"	183'
HORIZONTAL OFFSET	12" x 1/8 BEND	46' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET	12" x 1/32 BEND	11' ON BOTH SIDES OF BEND
REDUCER	12" x 8"	136'

* CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BASE UPON THE CONDITIONS ENCOUNTERED DURING INSTALLATION.

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PARK HOUSE UNIT 1

WATER DISTRIBUTION STANDARD DETAILS

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1 2 3 4 5 6 7 8

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

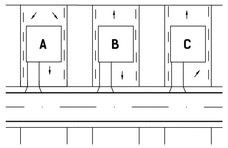
C5.D5

G:\04154\00\13-DWG\A-Plans\C5.D5 WATER DISTRIBUTION STANDARD DETAILS.dwg, 2025/08/27 1:23pm, sgonzales

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

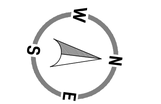
LEGEND

- SITE BOUNDARY
- DRAINAGE AREA
- Tc FLOW PATH
- ACCUMULATION POINT (1)
- JUNCTION POINT (A)
- FLOOD PLAIN LIMITS



TYPICAL LOT SITE PLAN

N.T.S.



SCALE: 1"=300'

0 300 600

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PARK HOUSE UNIT 1

MASTER DRAINAGE MAP

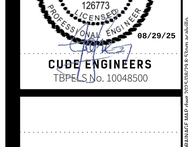
DATE
08/29/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.



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Project Name: Parkhouse Unit 1
Calculation Summary for Time of Concentrations & Project Flow

Precipitation Area Atlas 14

HYDROLOGY				Sheet Flow Tc Compuations						Shallow Conc. Tc Compuations					Concentrated Tc Computations			Overall	INTENSITY						Q FLOW					
Drainage Shed	Rational Shed Area (Ac.)	AREA OF ACCUMULATION (Ac.)	C	*Length*	Paved (Y or N)	Upstream Elev.	Downstream Elev	Slope	Time of Concentration	*Length*	Paved (Y or N)	Downstream Elev	Slope	Time of Concentration	*Length*	Velocity (fps)	Time of Concentration	Time of Concentration (min)	I2	I5	I10	I25	I100	Q2	Q5	Q10	Q25	Q100	Drainage Shed
0.1	0.33	0.1	0.50	*48.00*	N	600.72	597.46	6.80%	10.00						*175.82*	6	0.49	10.49	4.94	6.02	7.14	8.63	10.93	0.82	0.99	1.18	1.42	1.80	0.1
0.2	0.66	0.1:0.2	0.50	*48.00*	N	600.72	597.46	6.80%	10.00						*376.50*	6	1.05	11.05	4.84	5.91	7.00	8.47	10.73	1.60	1.95	2.31	2.80	3.54	0.2
0.3	6.79	0.3	0.32	*100.00*	N	620.00	618.68	1.32%	14.36	*813.33*	N	602.00	2.05%	5.91	*362.86*	6	1.01	21.27	3.55	4.42	5.27	6.42	8.26	7.71	9.60	11.45	13.95	17.95	0.3
0a	7.45	0.1:0.3	0.32	*100.00*	N	620.00	618.68	1.32%	14.36	*813.33*	N	602.00	2.05%	5.91	*362.86*	6	1.01	21.27	3.55	4.42	5.27	6.42	8.26	8.46	10.54	12.56	15.31	19.69	0a
0.4	1.19	0.4	0.50	*100.00*	N	600.00	599.67	0.33%	17.00	*498.22*	N	597.83	0.37%	6.94	*101.76*	6	0.28	24.22	3.32	4.13	4.93	6.02	7.76	1.98	2.46	2.93	3.58	4.62	0.4
0b	8.64	0.1:0.4	0.38	*100.00*	N	620.00	618.68	1.32%	14.36	*813.33*	N	602.00	2.05%	5.91	*601.41*	6	1.67	21.94	3.49	4.35	5.19	6.32	8.14	11.39	14.19	16.93	20.62	26.56	0b
1	14.60	1	0.32	*100.00*	N	600.00	598.93	1.07%	14.87	*850.00*	N	584.18	1.74%	6.64	*332.96*	6	0.92	22.43	3.45	4.30	5.13	6.26	8.05	16.12	20.09	23.97	29.25	37.61	1
1a	23.24	0.1:1	0.34	*100.00*	N	620.00	618.68	1.32%	14.36	*813.33*	N	602.00	2.05%	5.91	*1569.74*	6	4.36	24.63	3.30	4.09	4.89	5.97	7.70	26.18	32.45	38.80	47.37	61.10	1a
2	1.73	2	0.54	*100.00*	N	620.00	618.68	1.32%	14.36	*813.33*	N	602.00	2.05%	5.91	*1849.69*	6	5.14	25.40	3.25	4.03	4.81	5.88	7.58	3.04	3.76	4.49	5.49	7.08	2
3	4.42	3	0.54	*100.00*	N	598.08	594.01	4.07%	11.00	*75.00*	N	591.05	3.95%	0.39	*837.00*	6	2.33	13.72	4.42	5.42	6.43	7.80	9.93	10.55	12.94	15.35	18.62	23.70	3
A	29.39	0.1:3	0.38	*100.00*	N	620.00	618.68	1.32%	14.36	*813.33*	N	602.00	2.05%	5.91	*1849.69*	6	5.14	25.40	3.25	4.03	4.81	5.88	7.58	36.58	45.36	54.14	66.18	85.32	A
4	2.06	4	0.54	*97.37*	N	591.00	589.52	1.52%	13.96						*475.79*	6	1.32	15.28	4.20	5.17	6.14	7.46	9.52	4.67	5.75	6.83	8.30	10.59	4
5	2.37	5	0.54												*974.84*	6	2.71	2.71	6.88	8.16	9.60	11.50	14.33	8.81	10.44	12.29	14.72	18.34	5
B	4.43	4:5	0.54	*97.37*	N	591.00	589.52	1.52%	13.96						*475.79*	6	1.32	15.28	4.20	5.17	6.14	7.46	9.52	10.05	12.37	14.69	17.85	22.77	B
C	33.82	A:B	0.40	*100.00*	N	620.00	618.68	1.32%	14.36	*813.33*	N	602.00	2.05%	5.91	*1919.75*	6	5.33	25.60	3.23	4.01	4.79	5.85	7.56	44.08	54.73	65.37	79.84	103.18	C
5.1	1.46	5.1	0.54	*94.45*	N	589.27	587.92	1.43%	14.14						*337.19*	6	0.94	15.08	4.23	5.20	6.18	7.50	9.57	3.33	4.10	4.87	5.91	7.54	5.1
5.2	5.30	5.2	0.54	*100.00*	N	600.00	592.72	7.28%	10.00	*75.89*	N	591.50	1.61%	0.62	*836.73*	6	2.32	12.94	4.54	5.55	6.59	7.98	10.15	12.99	15.88	18.86	22.84	29.05	5.2
6	2.35	6	0.54	*100.00*	N	620.00	618.68	1.32%	14.36	*813.33*	N	602.00	2.05%	5.91	*2333.65*	6	6.48	26.75	3.16	3.91	4.68	5.72	7.39	4.01	4.96	5.94	7.26	9.38	6
D	42.93	C+5.1:5.2+6	0.43	*100.00*	N	620.00	618.68	1.32%	14.36	*813.33*	N	602.00	2.05%	5.91	*2333.65*	6	6.48	26.75	3.16	3.91	4.68	5.72	7.39	58.67	72.60	86.90	106.21	137.21	D
7	5.93	7	0.54	*100.00*	N	600.80	592.87	7.93%	10.00	*76.08*	N	591.64	1.62%	0.62	*1157.17*	6	3.21	13.83	4.41	5.40	6.41	7.77	9.90	14.12	17.29	20.53	24.88	31.70	7
7.1	1.66	7.1	0.54	*100.00*	N	620.00	618.68	1.32%	14.36	*813.33*	N	602.00	2.05%	5.91	*2612.98*	6	7.26	27.52	3.12	3.85	4.61	5.64	7.29	2.80	3.45	4.13	5.06	6.53	7.1
7a	50.52	D+7+7.1	0.45	*100.00*	N	620.00	618.68	1.32%	14.36	*813.33*	N	602.00	2.05%	5.91	*2612.98*	6	7.26	27.52	3.12	3.85	4.61	5.64	7.29	70.72	87.26	104.49	127.84	165.24	7a
7.2	2.50	7.2	0.54	*100.00*	N	590.33	588.14	2.18%	12.64						*700.46*	6	1.95	14.58	4.30	5.28	6.27	7.61	9.70	5.81	7.13	8.46	10.27	13.10	7.2
7.3	2.88	7.3	0.54	*100.00*	N	585.56	584.79	0.77%	16.00	*35.00*	N	584.57	0.63%	0.46	*333.00*	6	0.93	17.39	3.93	4.87	5.80	7.05	9.03	6.11	7.57	9.02	10.96	14.04	7.3
7b	55.90	7a+7.2+7.3	0.46	*100.00*	N	620.00	618.68	1.32%	14.36	*813.33*	N	602.00	2.05%	5.91	*2612.98*	6	7.26	27.52	3.12	3.85	4.61	5.64	7.29	79.78	98.45	117.88	144.22	186.41	7b

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PARK HOUSE UNIT 1

MASTER DRAINAGE MAP

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C6.01

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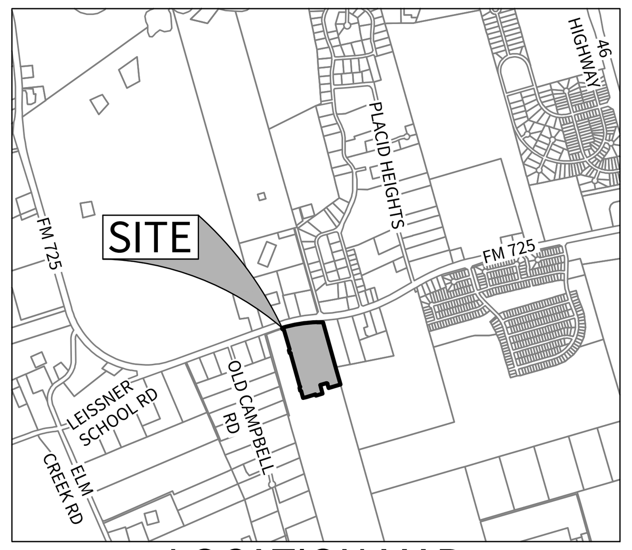
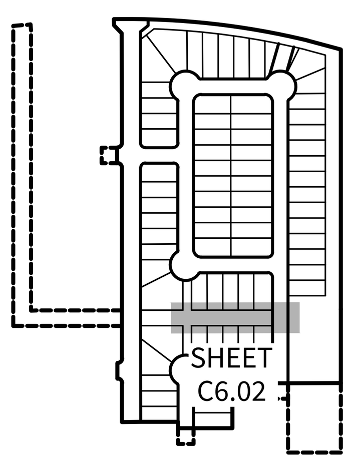
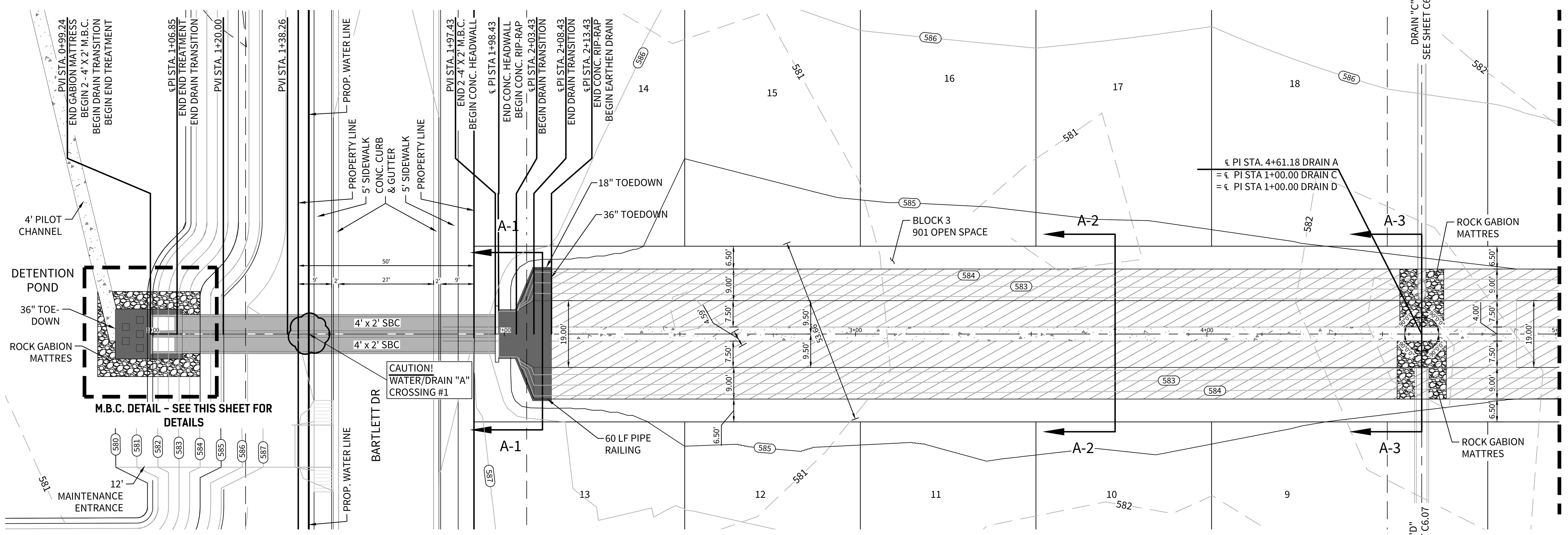


LOCATION MAP
N.T.S

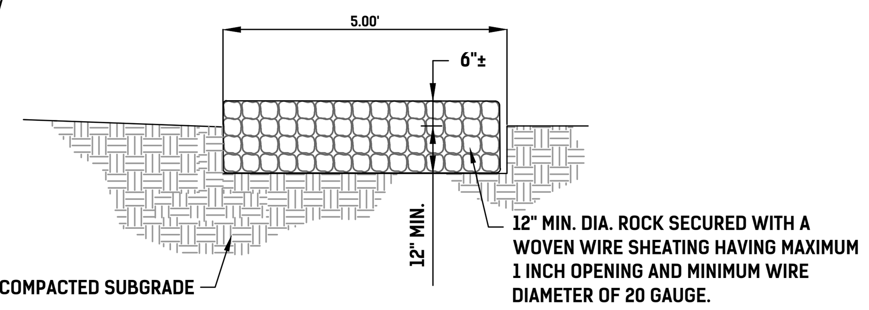


SITE MAP
NOT TO SCALE



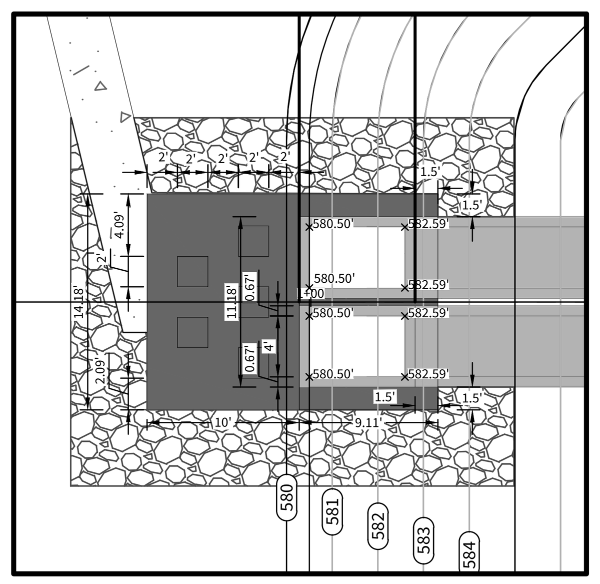
LEGEND

- PROPOSED CONCRETE RIP-RAP
- PROPOSED EARTHEN DRAIN
- PROPOSED M.B.C.
- PROPOSED ROCK GABION MATTRESS
- PROPOSED PILOT CHANNEL

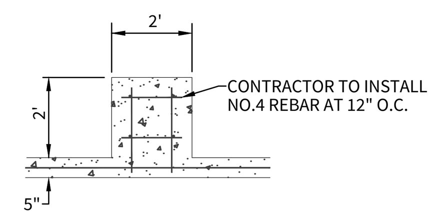


NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.

GABION MATTRESS DETAIL (N.T.S.)



M.B.C. DETAIL
SCALE: 1" = 10'



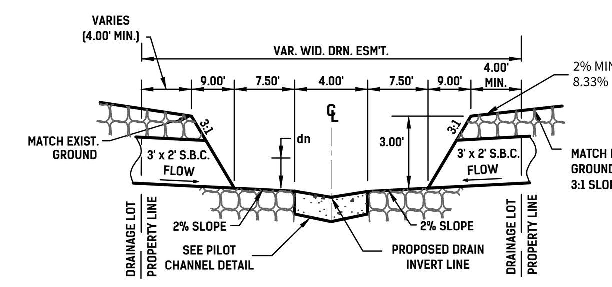
BAFFLE BLOCK POND REINFORCEMENT DETAIL
(N.T.S.)

NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF SEGUIN. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.

DRAIN A

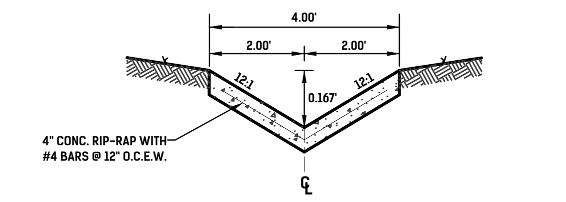
STA. 0+00.00 TO STA. 5+00.00



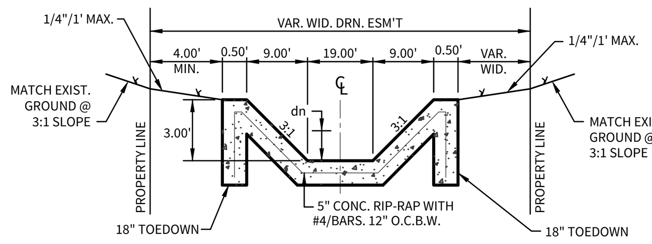
DRAIN "A" SECTION "A-3"
(N.T.S.)
STA. 4+61.18

Name	"A-1"	"A-2"
BEGIN STA	2+08.43	2+13.43
END STA	2+13.43	5+90.36
Q_2 (cfs)	58.67	58.67
h (ft)	3.00'	3.00'
b_w (ft)	19.00'	19.00'
z (_):1 left	3	3
z (_):1 right	3	3
t_w (ft)	37	37
n	0.015	0.033
Slope (%)	0.25%	0.25%
d_n (ft)	0.74'	1.15'
V (fps)	3.76	2.27

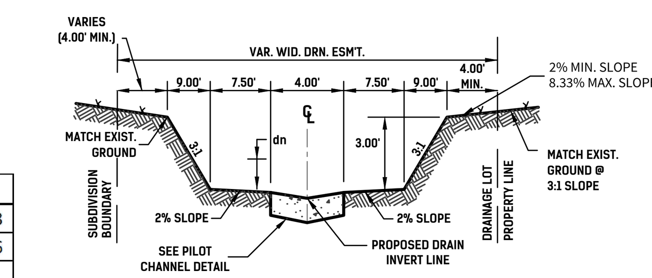
Name	"A-1"	"A-2"
BEGIN STA	2+08.43	2+13.43
END STA	2+13.43	5+90.36
Q_{100} (cfs)	137.21	137.21
h (ft)	3.00'	3.00'
b_w (ft)	19.00'	19.00'
z (_):1 left	3	3
z (_):1 right	3	3
t_w (ft)	37	37
n	0.015	0.033
Slope (%)	0.25%	0.25%
d_n (ft)	1.20'	1.87'
V (fps)	5.04	2.99



PILOT CHANNEL DETAIL
(N.T.S.)



DRAIN "A" SECTION "A-1"
(N.T.S.)
STA. 2+08.43 - STA. 2+13.43



DRAIN "A" SECTION "A-2"
(N.T.S.)
STA. 2+13.43 - STA. 5+90.36

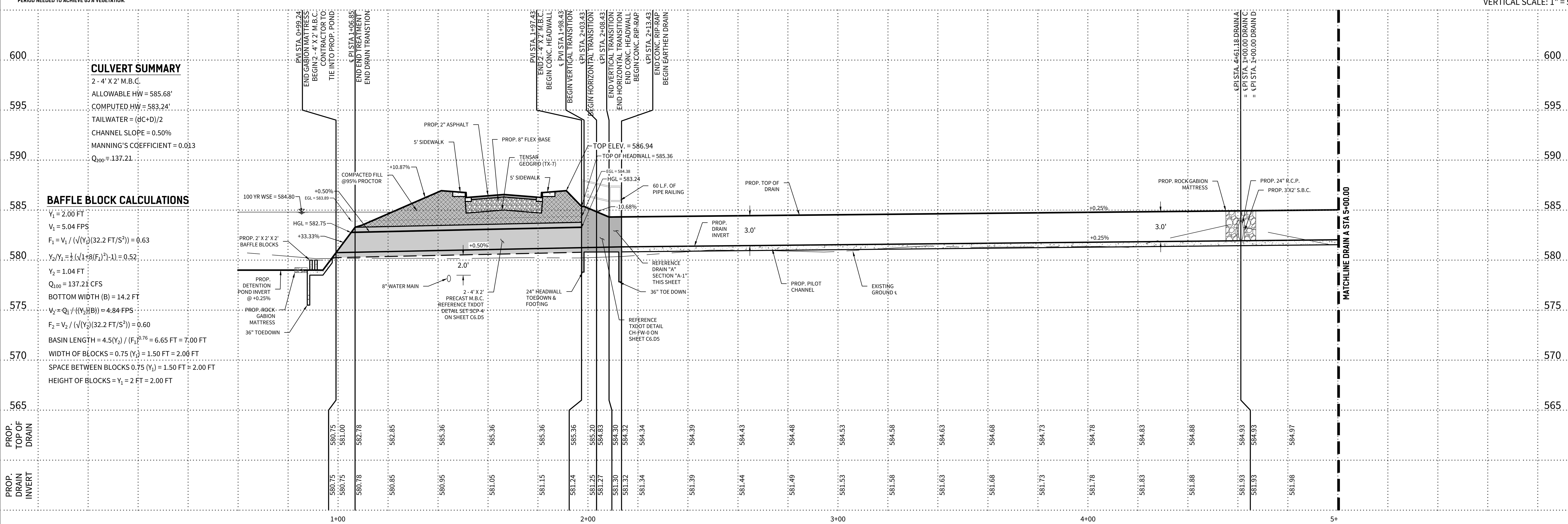
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'

CULVERT SUMMARY

2 - 4' X 2' M.B.C.
ALLOWABLE HW = 585.68'
COMPUTED HW = 583.24'
TAILWATER = (dC+D)/2
CHANNEL SLOPE = 0.50%
MANNING'S COEFFICIENT = 0.013
Q_{100} = 137.21

BAFFLE BLOCK CALCULATIONS

Y_1 = 2.00 FT
V_1 = 5.04 FPS
$F_1 = V_1 / (\sqrt{(Y_1)(32.2\ FT/S^2)}) = 0.63$
$Y_2/Y_1 = \frac{1}{2}(\sqrt{1+8(F_1)^2}-1) = 0.52$
Y_2 = 1.04 FT
Q_{100} = 137.21 CFS
BOTTOM WIDTH (B) = 14.2 FT
$V_2 = Q_1 / ((Y_2)(B))$ = 4.84 FPS
$F_2 = V_2 / (\sqrt{(Y_2)(32.2\ FT/S^2)}) = 0.60$
BASIN LENGTH = $4.5(Y_2) / (F_1)^{0.76}$ = 6.65 FT = 7.00 FT
WIDTH OF BLOCKS = 0.75 (Y_1) = 1.50 FT = 2.00 FT
SPACE BETWEEN BLOCKS 0.75 (Y_1) = 1.50 FT = 2.00 FT
HEIGHT OF BLOCKS = Y_1 = 2 FT = 2.00 FT



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PARK HOUSE UNIT 1

DRAINAGE PLAN & PROFILE DRAIN A

DATE
08/28/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1.
2.
3.
4.
5.
6.
7.
8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C6.02

R:\04154\001\2-DWG\4-Plans\C6.02 DRAINAGE PLAN & PROFILE DRAIN A.dwg 2025/08/28 11:23am svelazquez

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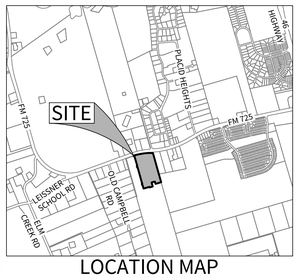
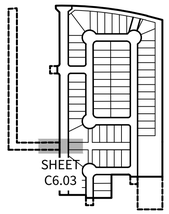


LOCATION MAP
N.T.S



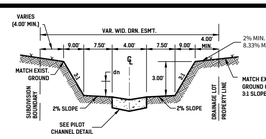
SITE MAP
NOT TO SCALE

LEGEND

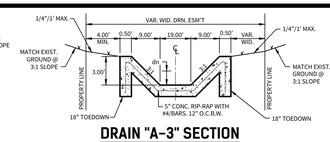
- PROPOSED CURB BOX INLET
- PROPOSED CONCRETE RIP-RAP
- PROPOSED EARTHEN DRAIN
- PROPOSED M.B.C.
- PROPOSED PILOT CHANNEL

NOTES:

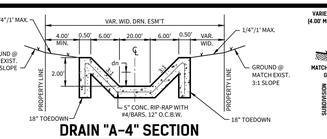
1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF SEGUIN. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.



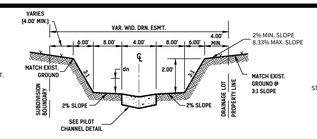
DRAIN "A" SECTION "A–2"
(N.T.S.)
STA. 2+13.43 - STA. 5+90.36



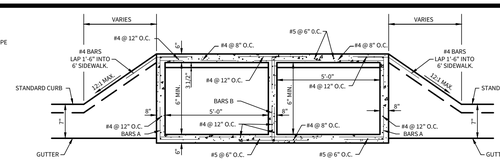
DRAIN "A–3" SECTION
(N.T.S.)
STA. 5+90.36 - STA. 5+95.36



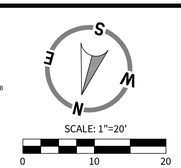
DRAIN "A–4" SECTION
(N.T.S.)
STA. 6+77.36 - STA. 6+82.36

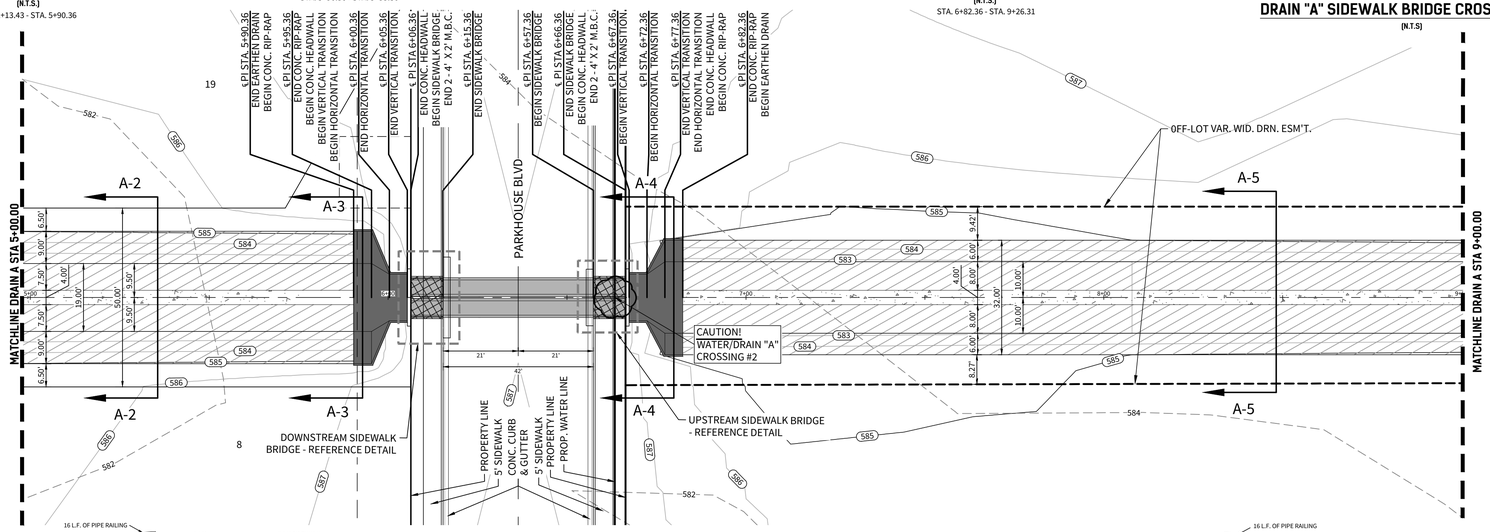


DRAIN "A" SECTION "A–5"
(N.T.S)
STA. 6+82.36 - STA. 9+26.31



DRAIN "A" SIDEWALK BRIDGE CROSS-SECTION

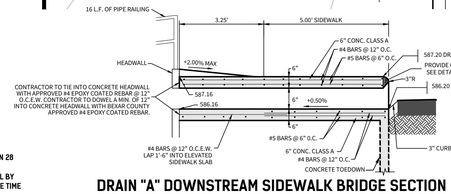




(N.T.S)

Name	"A-2"	"A-3"	"A-4"	"A-5"
BEGIN STA	2+13.43	5+90.36	6+77.36	6+82.36
END STA	5+90.36	5+95.36	6+82.36	9+10.30
Q_{100} [cfs]	137.21	103.18	103.18	85.32
h (ft)	3.00'	3.00'	2.00'	2.00'
b_w (ft)	19.00'	19.00'	20.00'	20.00'
z [_]:1 left	3	3	3	3
z [_]:1 right	3	3	3	3
t_w (ft)	37	37	32	32
n	0.033	0.015	0.015	0.033
Slope (%)	0.25%	0.25%	0.25%	0.25%
d_c (ft)	1.87'	1.02'	0.99'	1.39'
V (fps)	2.99	4.58	4.52	2.54

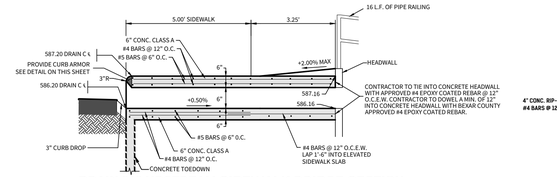
Name	"A-2"	"A-3"	"A-4"	"A-5"
BEGIN STA	2+13.43	5+90.36	6+77.36	6+82.36
END STA	5+90.36	5+95.36	6+82.36	9+10.30
Q_T (cfs)	58.67	44.08	44.08	36.58
h (ft)	3.00'	3.00'	2.00'	2.00'
b_w (ft)	19.00'	19.00'	20.00'	13.00'
z [_]:1 left	3	3	3	3
z [_]:1 right	3	3	3	3
t_w (ft)	37	37	32	25
n	0.033	0.015	0.015	0.033
Slope (%)	0.25%	0.25%	0.25%	0.25%
d_c (ft)	1.15'	0.62'	0.60'	1.07'
V (fps)	2.27	3.40	3.35	2.10



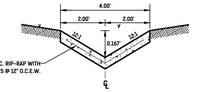
DRAIN "A" DOWNSTREAM SIDEWALK BRIDGE SECTION
(N.T.S)

DRAIN A

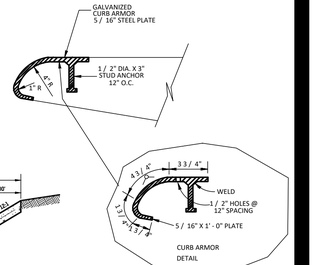
STA. 5+00.00 TO STA. 9+00.00



DRAIN "A" UPSTREAM SIDEWALK BRIDGE SECTION
(N.T.S)



PILOT CHANNEL DETAIL
(N.T.S)



CURB ARMOR DETAIL
(N.T.S)

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'

SIDEWALK DRAIN A BRIDGE OPENING

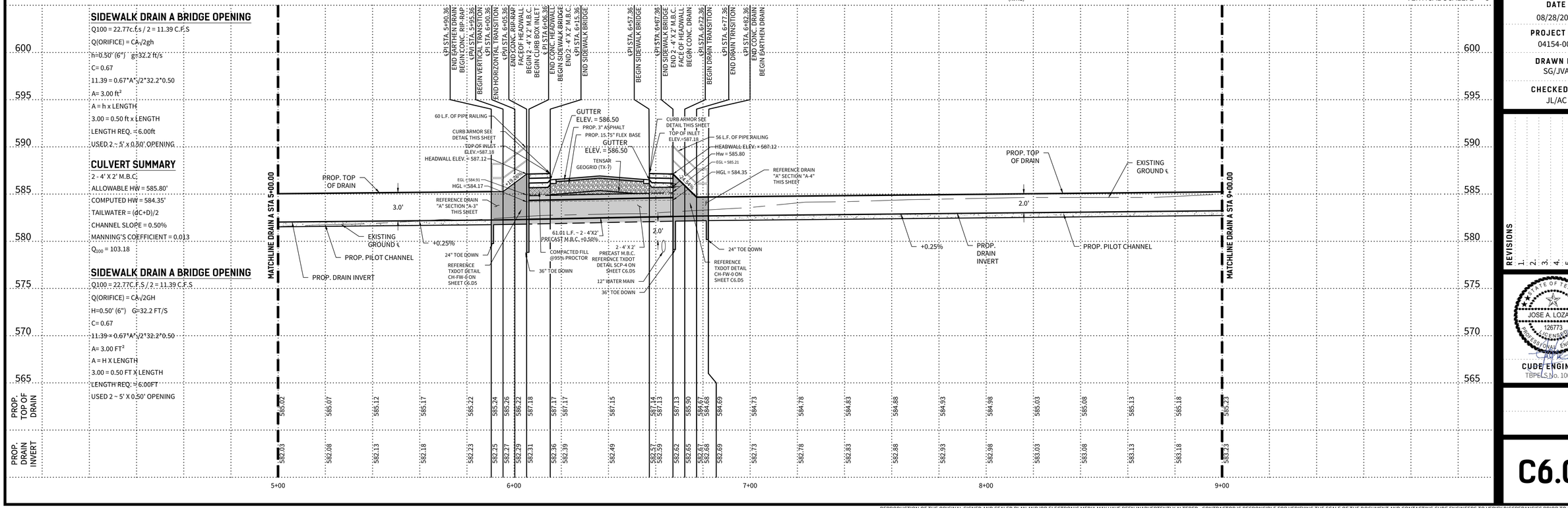
Q100 = 22.77C.f.s / 2 = 11.39 C.F.S
Q(ORIFICE) = CA√2gh
h=0.50' (6") g=32.2 ft/s
C= 0.67
11.39 = 0.67*A*√2*32.2*0.50
A= 3.00 ft²
A = h x LENGTH
3.00 = 0.50 ft x LENGTH
LENGTH REQ. = 6.00ft
USED 2 - 5' x 0.50' OPENING

CULVERT SUMMARY

2 - 4' X 2' M.B.C.
ALLOWABLE HW = 585.80'
COMPUTED HW = 584.35'
TAILWATER = (dC+D)/2
CHANNEL SLOPE = 0.50%
MANNING'S COEFFICIENT = 0.013
Q_{100} = 103.18

SIDEWALK DRAIN A BRIDGE OPENING

Q100 = 22.77C.F.S / 2 = 11.39 C.F.S
Q(ORIFICE) = CA√2GH
H=0.50' (6") G=32.2 FT/S
C= 0.67
11.39 = 0.67*A*√2*32.2*0.50
A= 3.00 FT²
A = H X LENGTH
3.00 = 0.50 FT X LENGTH
LENGTH REQ. = 6.00FT
USED 2 ~ 5' X 0.50' OPENING



CUDEENGINEERS.COM
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1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE UNIT 1

DRAINAGE PLAN & PROFILE DRAIN A

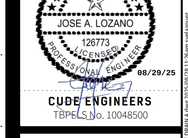
DATE
08/28/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

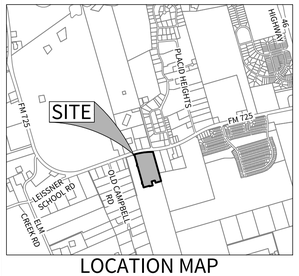
REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.



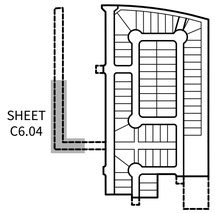
CUDE ENGINEERS
TBPELS No. 10048500

C6.03

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP
N.T.S



SITE MAP
NOT TO SCALE

LEGEND

- PROPOSED CONCRETE RIP-RAP
- PROPOSED EARTHEN DRAIN
- PROPOSED M.B.C.

NOTES:

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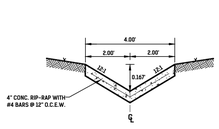
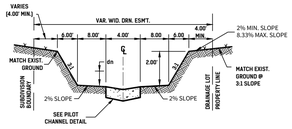
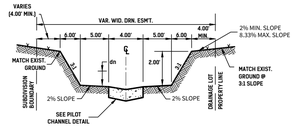


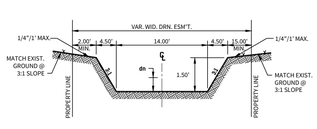
PILOT CHANNEL DETAIL
(N.T.S.)



DRAIN "A" SECTION "A-5"
(N.T.S.)



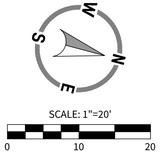
DRAIN "A" SECTION "A-6"
(N.T.S.)

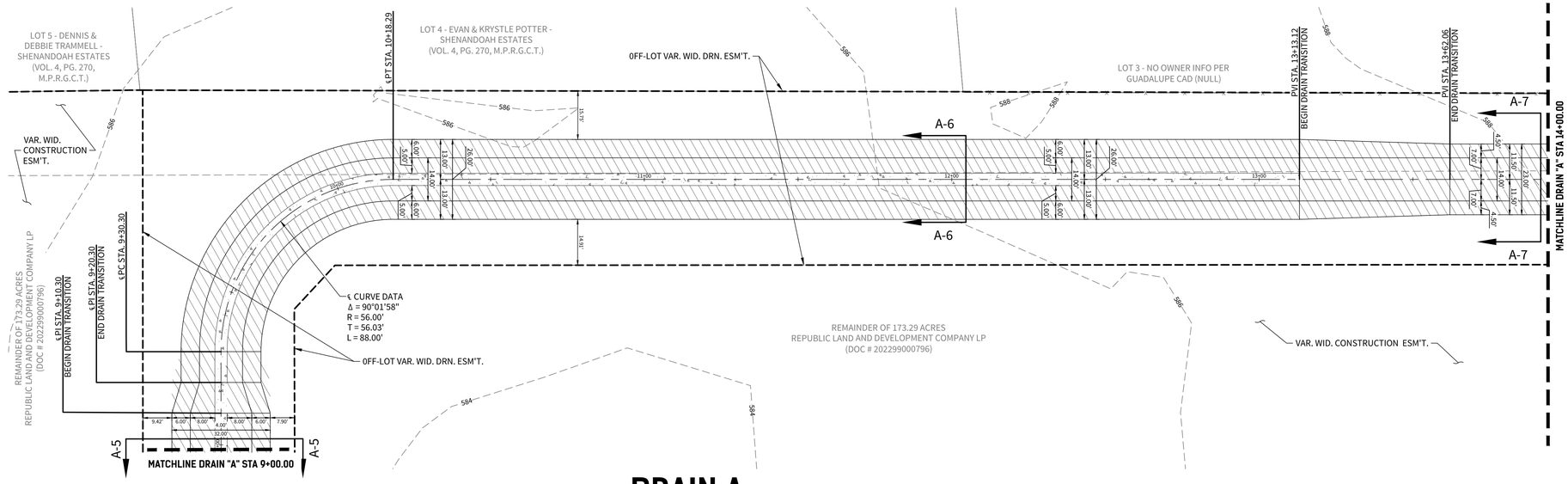


DRAIN "A-7" SECTIONS
(N.T.S.)

Name	"A-5"	"A-6"	"A-7"
BEGIN STA	6+82.36	9+20.30	13+62.06
END STA	9+10.30	13+13.12	18+73.69
Q_{100} (cfs)	85.32	61.10	61.10
h (ft)	2.00'	2.00'	1.50'
D_W (ft)	20.00'	13.00'	14.00'
z (_):1 left	3	3	3
z (_):1 right	3	3	3
t_w (ft)	32	25	23
n	0.033	0.032	0.035
Slope (%)	0.25%	0.25%	1.36%
d_n (ft)	1.39'	1.40'	0.89'
V (fps)	2.54	2.53	4.12

Name	"A-5"	"A-6"
BEGIN STA	6+82.36	9+20.30
END STA	9+10.30	13+13.12
Q_2 (cfs)	36.58	26.18
h (ft)	2.00'	2.00'
D_W (ft)	13.00'	13.00'
z (_):1 left	3	3
z (_):1 right	3	3
t_w (ft)	25	25
n	0.033	0.032
Slope (%)	0.25%	0.25%
d_n (ft)	1.07'	0.87'
V (fps)	2.10	2.01

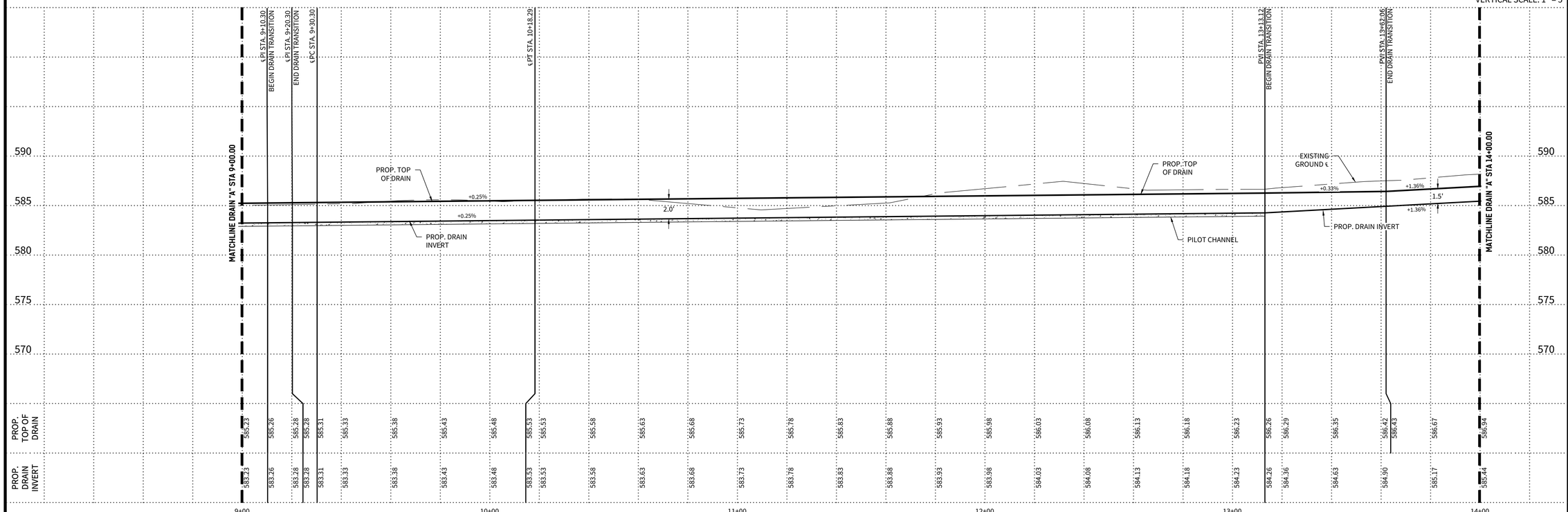




DRAIN A

STA. 9+00.00 TO STA. 14+00.00

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



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San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE UNIT 1

DRAINAGE PLAN & PROFILE DRAIN A

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

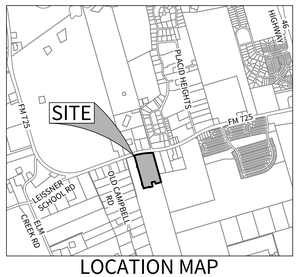
CHECKED BY
JL/AC

REVISIONS
1 2 3 4 5 6 7 8

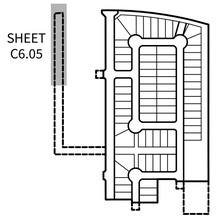
C6.04

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

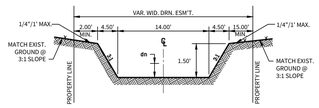
P:\04154\00\13 DWG\A Plans\04154000A DRAINAGE PLAN & PROFILE DRAIN A.dwg 2025/08/07 3:21am sgonzales



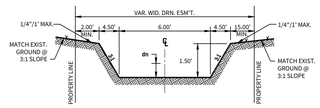
LOCATION MAP
N.T.S



SITE MAP
NOT TO SCALE

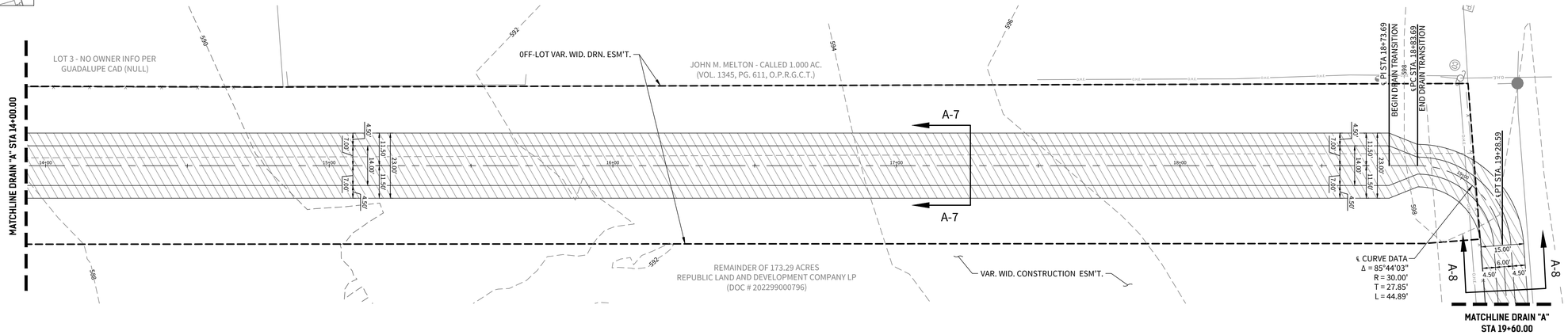


DRAIN "A-7" SECTIONS
(N.T.S.)



DRAIN "A-8" SECTIONS
(N.T.S.)

Name	"A-7"	"A-8"
BEGIN STA	13+62.06	18+83.69
END STA	18+73.69	20+54.21
Q_{100} [cfs]	61.10	26.56
h [ft]	1.50'	1.50'
b_w [ft]	14.00'	6.00'
z [ ]:1 left	3	3
z [ ]:1 right	3	3
t_w [ft]	23	15
n	0.035	0.035
Slope (%)	1.36%	1.36%
d_n [ft]	0.89'	0.85'
V [fps]	4.12	3.67



LEGEND

- PROPOSED CONCRETE RIP-RAP
- PROPOSED EARTHEN DRAIN
- PROPOSED M.B.C.

NOTES:

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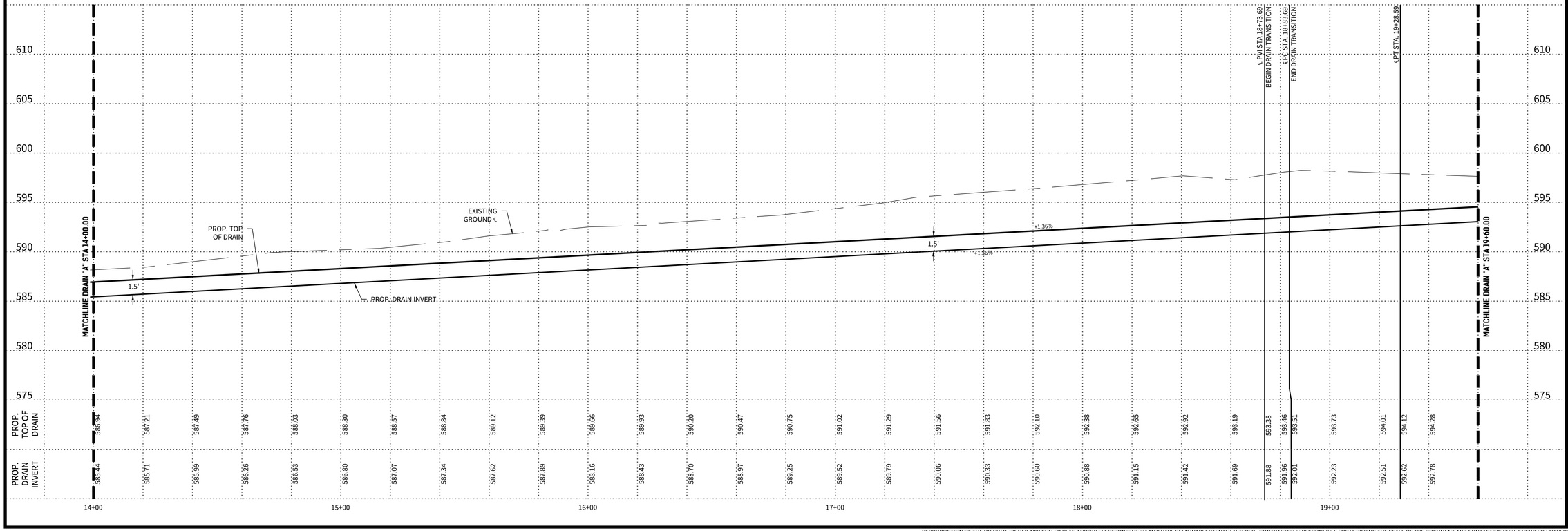
DRAIN A

STA. 14+00.00 TO STA. 19+60.00

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



	14+00	14+50	15+00	15+50	16+00	16+50	17+00	17+50	18+00	18+50	19+00	19+28.59	19+50
PROP. TOP OF DRAIN	586.94	587.21	587.49	587.76	588.03	588.30	588.57	588.84	589.12	589.39	589.66	589.93	590.20	590.47	590.75	591.02	591.29	591.56	591.83	592.10	592.38	592.65	592.92	593.19	593.38	593.46	593.51	593.73	594.01	594.12	594.28
PROP. DRAIN INVERT	585.44	585.71	585.99	586.26	586.53	586.80	587.07	587.34	587.62	587.89	588.16	588.43	588.70	588.97	589.25	589.52	589.79	590.06	590.33	590.60	590.88	591.15	591.42	591.69	591.88	591.96	592.01	592.23	592.51	592.62	592.78

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EST. 1980

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PARK HOUSE UNIT 1

DRAINAGE PLAN & PROFILE DRAIN A

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

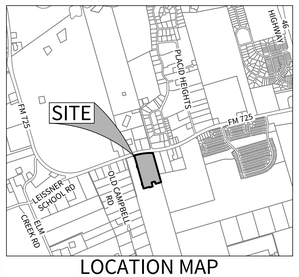
REVISIONS
1 2 3 4 5 6 7 8

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

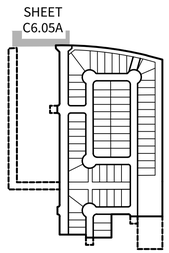
CUDE ENGINEERS
TBPELS No. 10048500

C6.05

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP
N.T.S



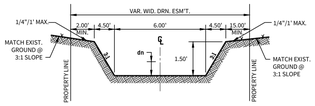
SITE MAP
NOT TO SCALE

LEGEND

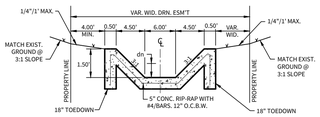
- PROPOSED CONCRETE RIP-RAP
- PROPOSED EARTHEN DRAIN
- PROPOSED M.B.C.

NOTES:

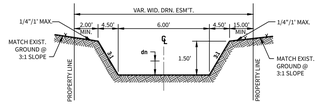
1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF SEGUIN. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.



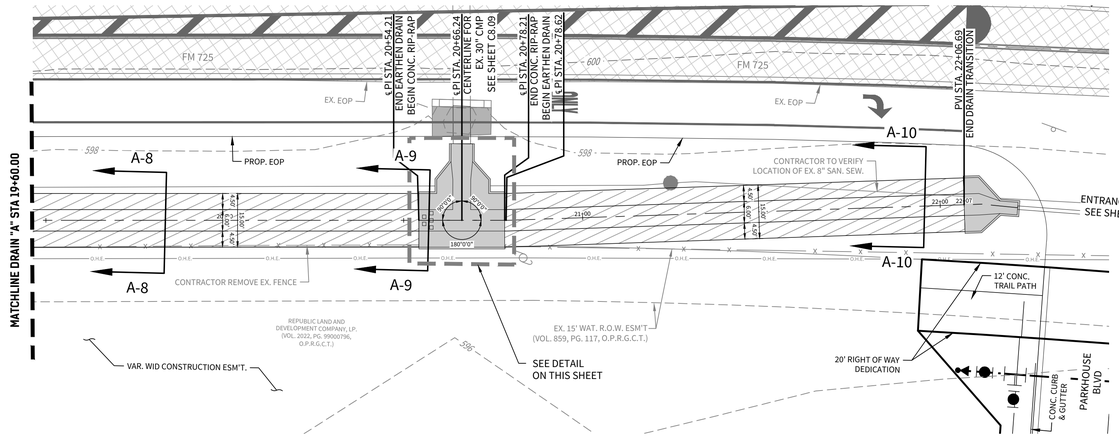
DRAIN "A-8" SECTIONS
(N.T.S.)



DRAIN "A" SECTION "A-9"
(N.T.S.)

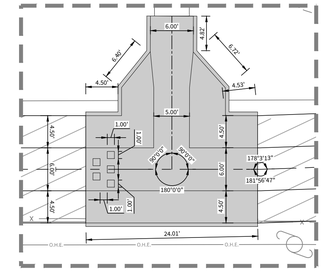


DRAIN "A-10" SECTIONS
(N.T.S.)



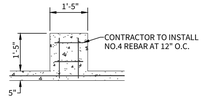
DRAIN A

STA. 19+60.00 TO END



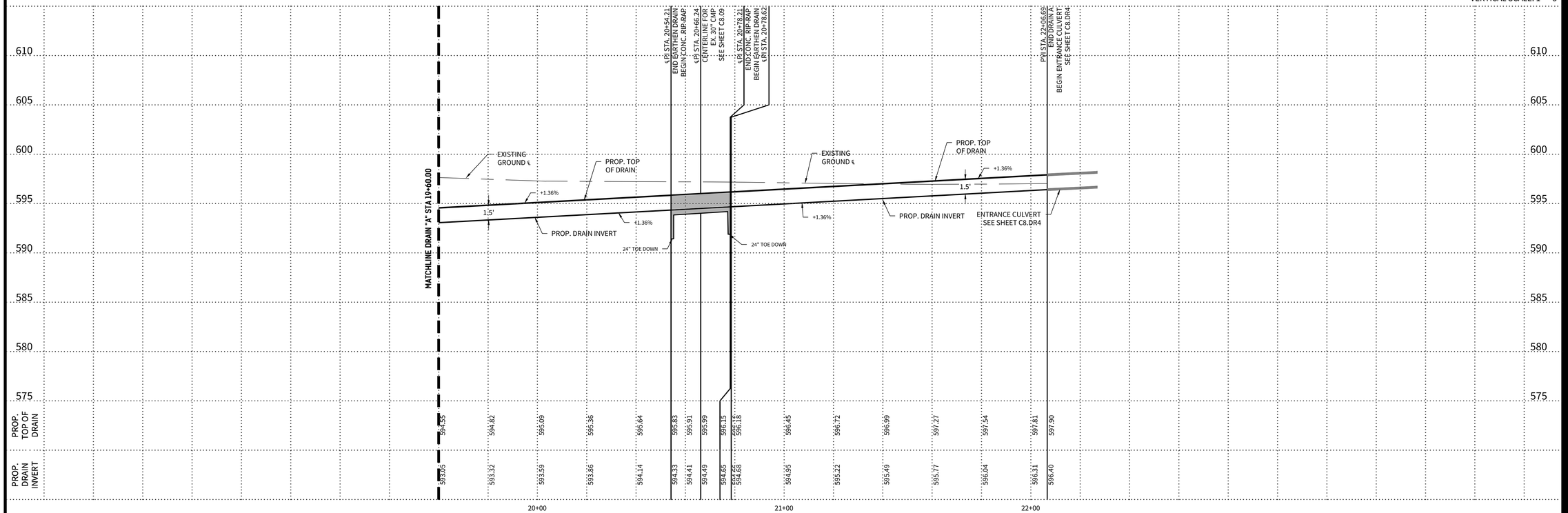
DRAIN A DETAIL
1" = 10'

Name	"A-8"	"A-9"	"A-10"
BEGIN STA	18+83.69	20+54.21	20+78.21
END STA	20+54.21	20+78.21	22+06.69
Q_{100} (cfs)	26.56	19.69	19.69
h (ft)	1.50'	1.50'	1.50'
D_W (ft)	6.00'	6.00'	6.00'
z (_):1 left	3	3	3
z (_):1 right	3	3	3
t_W (ft)	15	15	15
n	0.035	0.015	0.035
Slope (%)	1.36%	1.36%	1.36%
d_n (ft)	0.85'	0.45'	0.72'
V (fps)	3.67	5.99	3.36



BAFFLE BLOCK
DRAIN "A"
REINFORCEMENT DETAIL
(N.T.S.)

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



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CUDE ENGINEERS

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San Marcos, Texas 78666
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PARK HOUSE UNIT 1

DRAINAGE PLAN & PROFILE DRAIN A

DATE
08/28/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

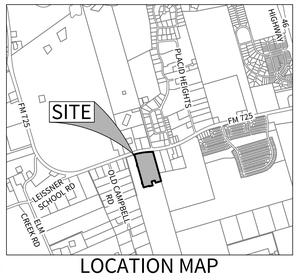
REVISIONS
1 2 3 4 5 6 7 8

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED PROFESSIONAL ENGINEER
08/29/25

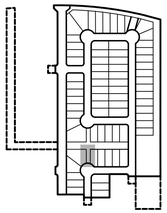
CUDE ENGINEERS
TBPELS No. 10048500

C6.05A

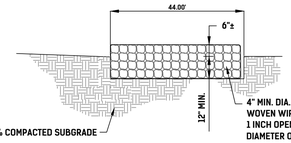
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP
N.T.S

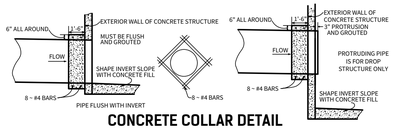


SITE MAP
NOT TO SCALE

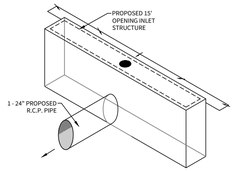


NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.

GABION MATTRESS DETAIL (N.T.S.)

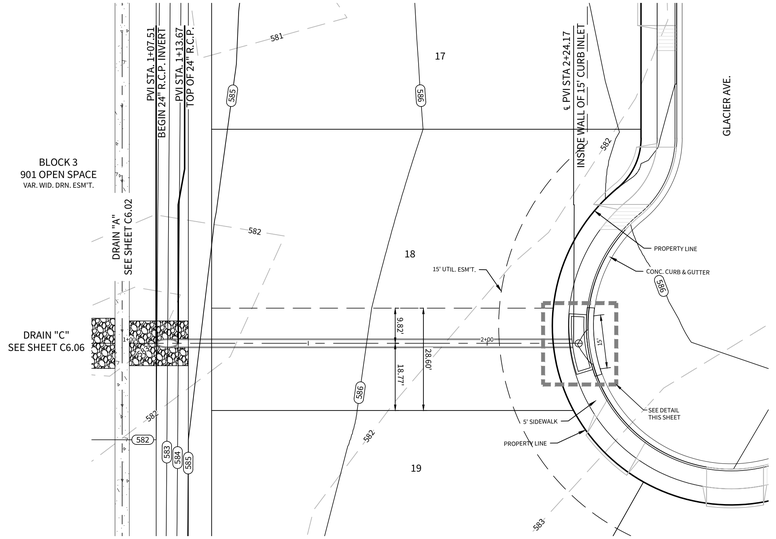


CONCRETE COLLAR DETAIL
(N.T.S.)



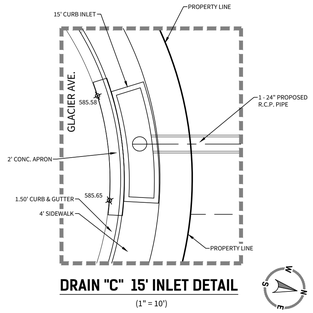
DRAIN "C"
15' INLET AND R.C.P. PIPE DETAIL
(N.T.S.)

SCALE: 1"=20'
0 10 20



DRAIN C

STA. 1+00.00 TO END



DRAIN "C" 15' INLET DETAIL
(1" = 10')

LEGEND

- PROPOSED CONCRETE RIP-RAP
- PROPOSED EARTHEN DRAIN
- PROPOSED M.B.C.

NOTES:

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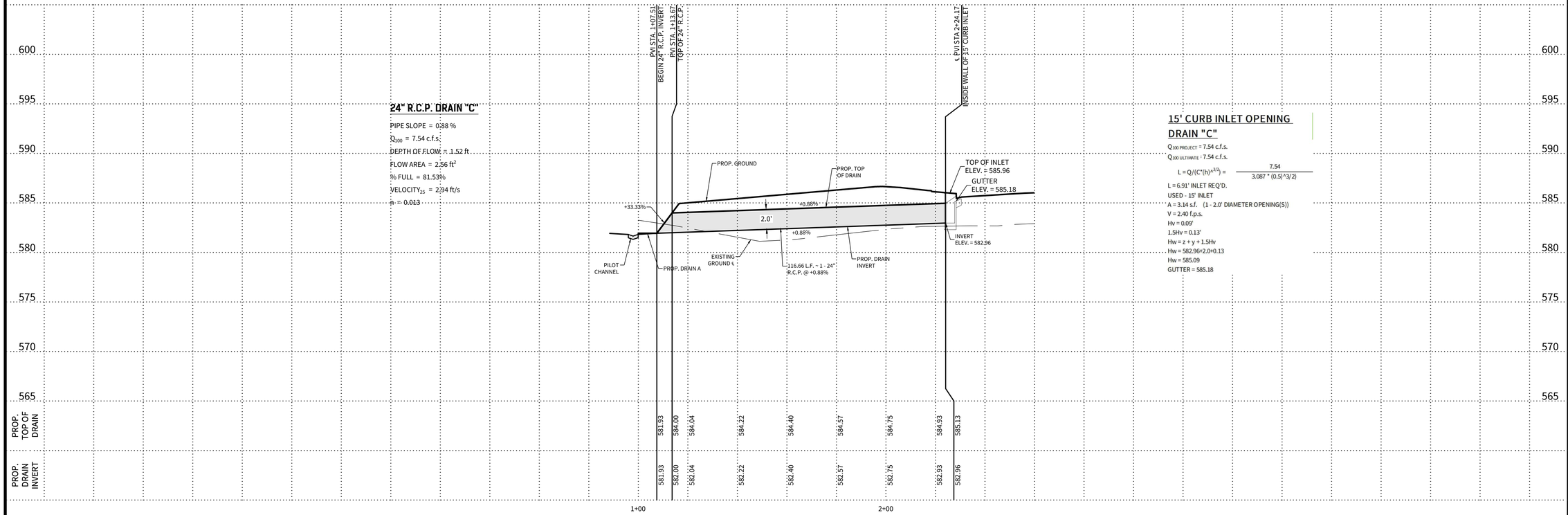
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



24" R.C.P. DRAIN "C"

PIPE SLOPE = 0.88 %
Q_{100} = 7.54 c.f.s.
DEPTH OF FLOW = 1.52 ft
FLOW AREA = 2.56 ft²
% FULL = 81.53%
VELOCITY$_{25}$ = 2.94 ft/s
n = 0.013

15' CURB INLET OPENING
DRAIN "C"

$Q_{100\ PROJECT}$ = 7.54 c.f.s.
$Q_{100\ ULTIMATE}$ = 7.54 c.f.s.

$L = Q/(C*(h)^{3/2}) = \frac{7.54}{3.087 * (0.5)^{3/2}}$

L = 6.91' INLET REQ'D.
USED - 15' INLET
A = 3.14 s.f. (1 - 2.0' DIAMETER OPENING(S))
V = 2.40 f.p.s.
Hv = 0.09'
1.5Hv = 0.13'
Hw = z + y + 1.5Hv
Hw = 582.96+2.0+0.13
Hw = 585.09
GUTTER = 585.18

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EST. 1980

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PARK HOUSE
UNIT 1

DRAINAGE PLAN & PROFILE DRAIN C

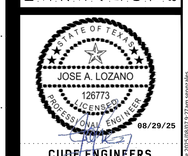
DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

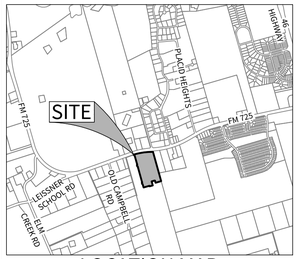
REVISIONS
1 2 3 4 5 6 7 8



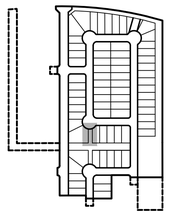
CUDE ENGINEERS
TBPELS No. 10048500

C6.06

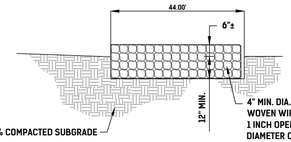
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP
N.T.S

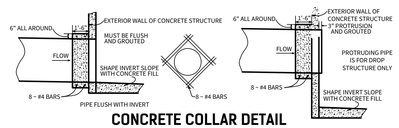


SITE MAP
NOT TO SCALE

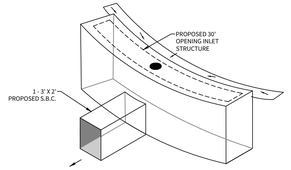


NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.

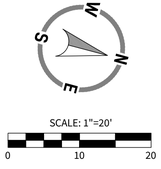
GABION MATTRESS DETAIL (N.T.S.)



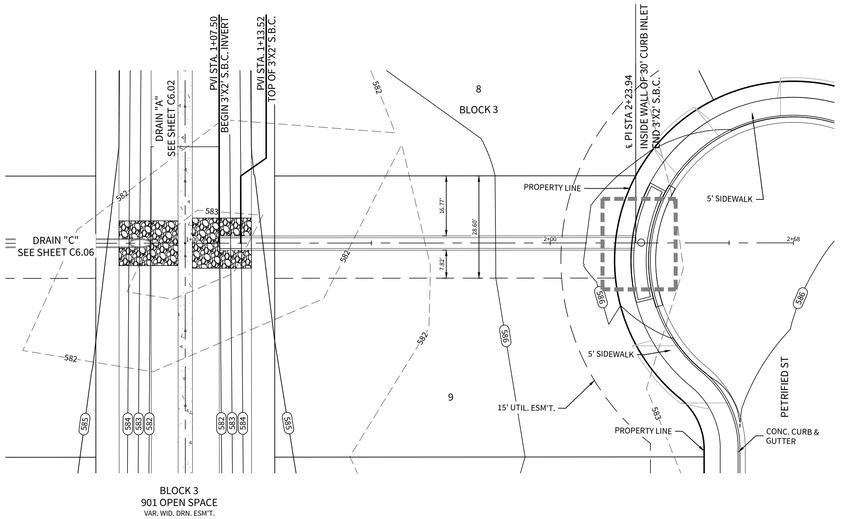
CONCRETE COLLAR DETAIL
(N.T.S.)



DRAIN "D"
30' CAST-IN-PLACE INLET AND S.B.C.. PIPE DETAIL
(N.T.S.)

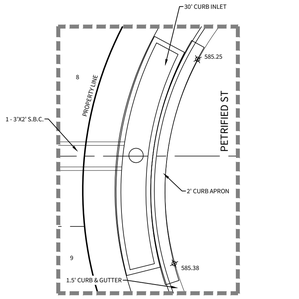


SCALE: 1"=20'
0 10 20



DRAIN D

STA. 1+00.00 TO END



DRAIN "D" 30' CAST-IN-PLACE INLET DETAIL
(1" = 10')

LEGEND

- PROPOSED CONCRETE RIP-RAP
- PROPOSED EARTHEN DRAIN
- PROPOSED M.B.C.

NOTES:

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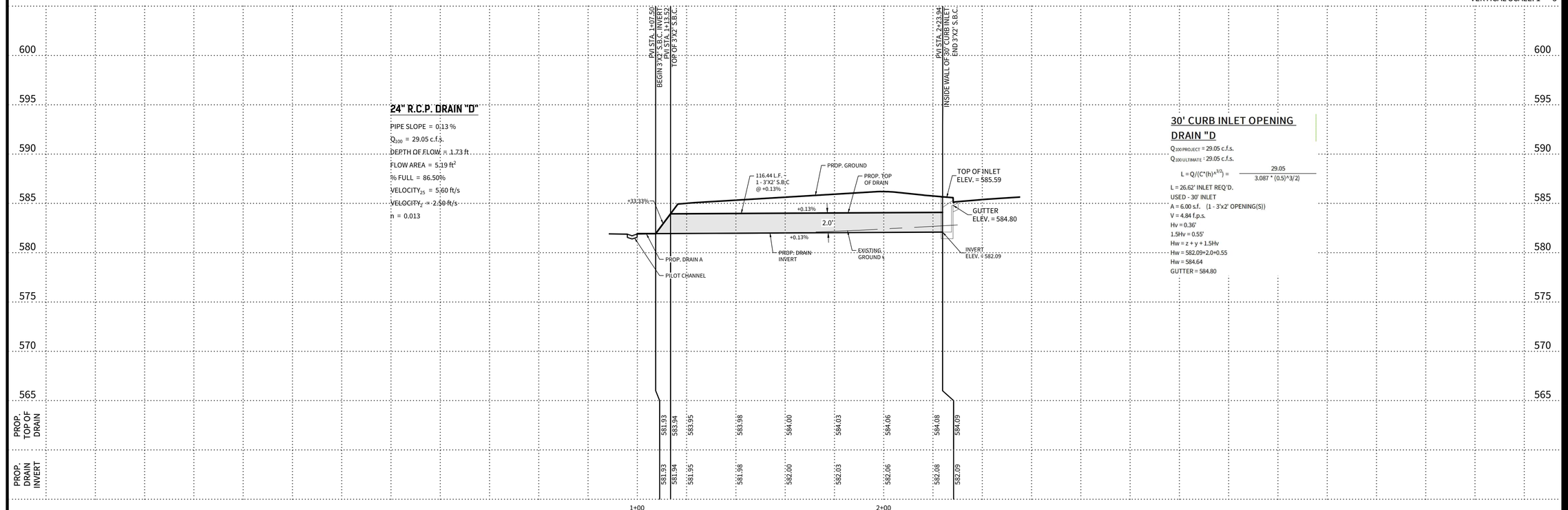
VERTICAL SCALE: 1" = 5'



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PARK HOUSE UNIT 1

DRAINAGE PLAN & PROFILE DRAIN D

DATE
08/07/2025
PROJECT NO.
04154-000
DRAWN BY
SG/JVA
CHECKED BY
JL/AC

REVISIONS 1 2 3 4 5 6 7 8

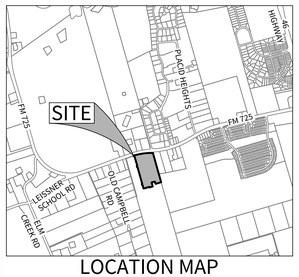
STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C6.07

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

P:\04154\001\DWG\Plans\Civil\DRAINAGE PLAN & PROFILE DRAIN D.dwg 2025/08/07 9:23am sgonzales



LOCATION MAP
N.T.S

BAFFLE BLOCK CALCULATIONS

Y_1 = 0.90 FT

V_1 = 5.23 FPS

$F_1 = V_1 / (\sqrt{(Y_1)(32.2\ FT/S^2)}) = 0.97$

$Y_2/Y_1 = \frac{1}{2}(\sqrt{1+8(F_1)^2}-1) = 0.96$

Y_2 = 0.87 FT

Q_{100} = 300.90 CFS

BOTTOM WIDTH (B) = 69.0 FT

$V_2 = Q_1 / ((Y_2)(B))$ = 4.85 FPS

$F_2 = V_2 / (\sqrt{(Y_2)(32.2\ FT/S^2)}) = 0.90$

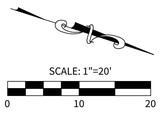
BASIN LENGTH = $4.5(Y_2) / (F_1)^{0.76}$ = 3.98 FT = 5.00 FT

WIDTH OF BLOCKS = 0.75 (Y_1) = 0.68 FT = 1.00 FT

SPACE BETWEEN BLOCKS 0.75 (Y_1) = 0.68 FT = 1.00 FT

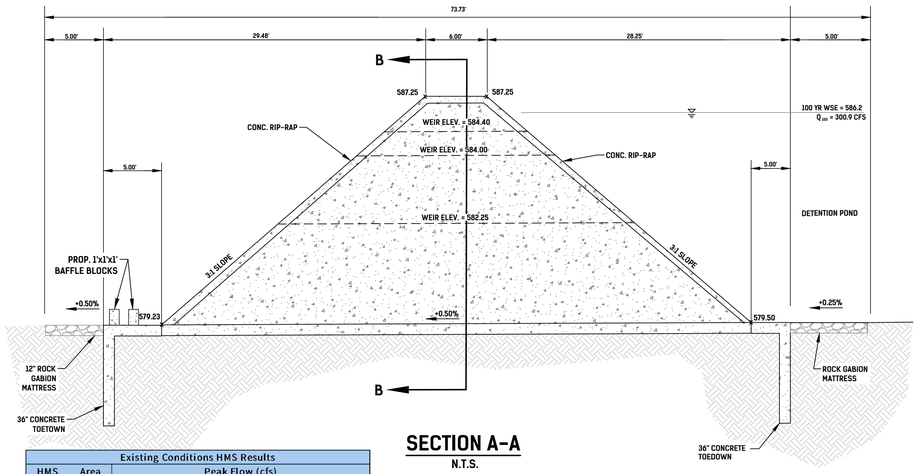
HEIGHT OF BLOCKS = Y_1 = 0.90 FT = 1.00 FT

Q_{100} (cfs)	300.90
h (ft)	2.00'
b_w (ft)	64.25'
n	0.150
Slope (%)	33.33%
d_n (ft)	0.90'
V (fps)	5.23



LEGEND

- EARTHEN VEGETATION
- 710 PROPOSED CONTOUR
- 710 EXISTING CONTOUR
- CONC. RIP RAP



SECTION A-A
N.T.S.

Existing Conditions HMS Results							
HMS Node	Area sq mi	Peak Flow (cfs) 2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
AP 1	0.084	109.2	153.9	192.8	247.1	264.6	330.9
Developed Conditions HMS Results - With Pond							
HMS Node	Area sq mi	Peak Flow (cfs) 2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
AP 1	0.084	97.5	141.8	178.4	227.7	264.6	300.9
Developed - Existing Difference							
HMS Node	Area sq mi	Peak Flow (cfs) 2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
AP 1	0.084	-11.7	-12.1	-14.4	-19.4	-23.4	-30

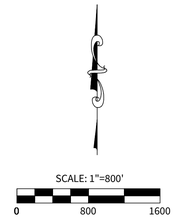
Pond Discharge	2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
Peak Discharge, cfs	97.5	141.8	178.4	227.7	264.6	300.9
Peak Elevation, ft.	582.3	582.9	583.3	583.8	584.1	584.4

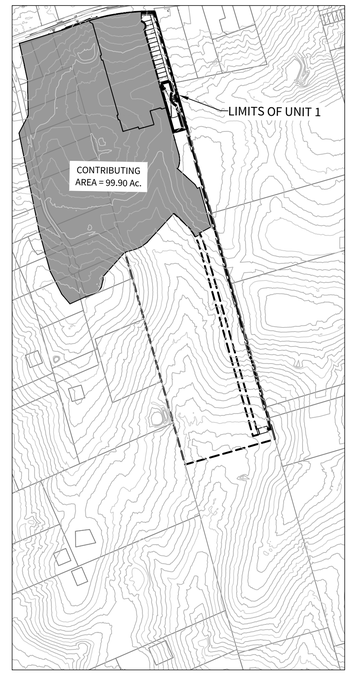
POND C STAGE-STORAGE-DISCHARGE TABLE

Elevation	Depth	Accumulated Depth (ft.)	Area (sf.)	Volume (cf.)	Accumulated Volume (cf.)
579.5	0	0	0.00	0.00	0.00
579.75	0.25	0.25	7691.80	1922.95	1922.95
580	0.25	0.5	26006.00	9724.98	11647.93
581	1	1.5	41169.00	41169.00	52816.93
582	1	2.5	44391.00	44391.00	96605.43
583	1	3.5	47673.00	47673.00	144278.43
584	1	4.5	51005.00	51005.00	195283.43
585	1	5.5	90403.00	90403.00	285686.43
586	1	6.5	104157.00	104157.00	389843.43
587	1	7.5	114783.00	114783.00	504626.43

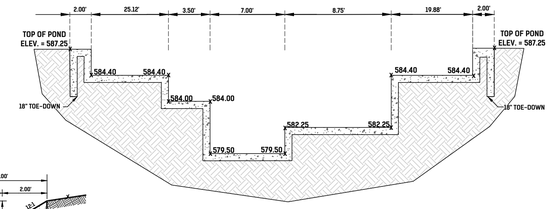
NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.

GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL
N.T.S.

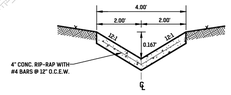




DETENTION POND CONTRIBUTING AREA
1" = 800'



SECTION B-B
N.T.S.



PILOT CHANNEL DETAIL
(N.T.S.)

POND OUTLET CONFIGURATION:

4 Broad Crested Weirs
- Coefficient = 2.9 $feet^{1/2}/s$

Weir 1
- Elevation = 579.5 feet (Bottom of Pond
- Length = 7.0 feet

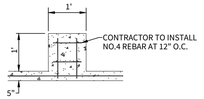
Weir 2
- Elevation = 582.25 feet
- Length = 8.75 feet

Weir 3
- Elevation = 584.0 feet
- Length = 3.5 feet

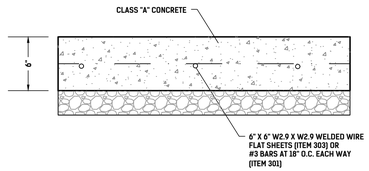
Weir 4
- Elevation = 584.4 feet
- Length = 45 feet

Top of Pond Elevation = 587.25 feet

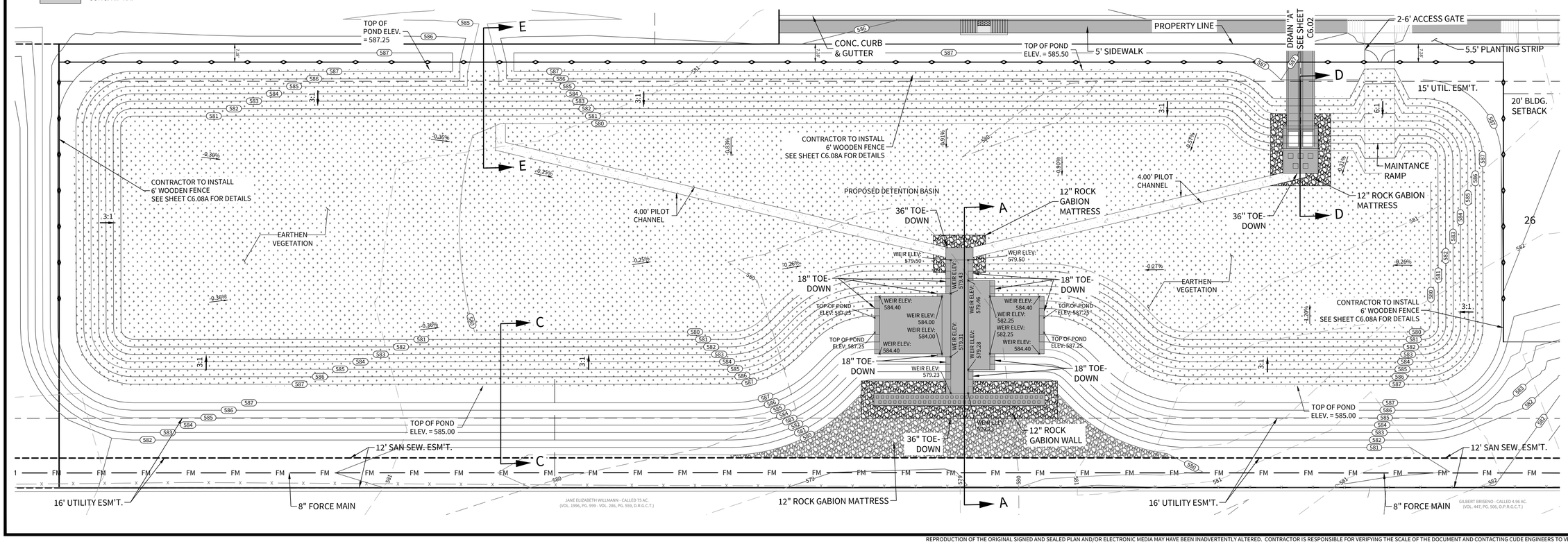
Summary of Peak 100-yr Detention Pond Results:
Ultimate Site 100-Year WSEL = 586.2 feet
Ultimate Site Max 100 Year Storage Volume = 5.3 ac-ft



BAFFLE BLOCK POND REINFORCEMENT DETAIL
(N.T.S.)



CONCRETE RIP-RAP DETAIL
N.T.S.



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PARK HOUSE UNIT 1

DETENTION POND PLAN

DATE
08/29/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

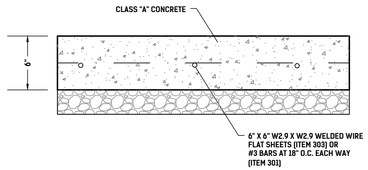
CUDE ENGINEERS
TBPELS No. 10048500

C6.08

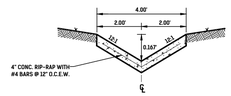
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

GENERAL NOTES:

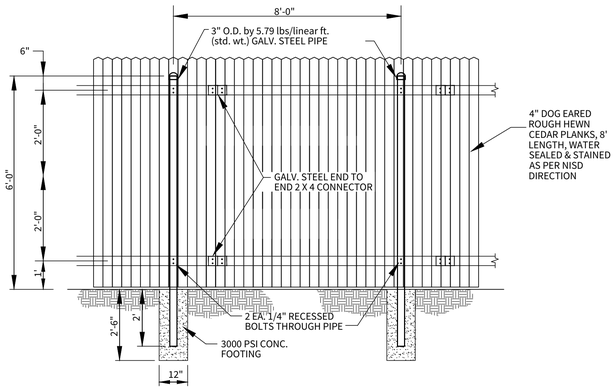
1. THE DETENTION POND FACILITY SHALL ALSO BE USED AS A TEMPORARY SEDIMENT TRAP FOR THE PURPOSES OF THE TEXAS POLLUTION DISCHARGE ELIMINATION SYSTEM CONSTRUCTION PERMIT FOR THIS SITE. THE CONTRACTOR SHALL CLEAN ALL SEDIMENT OUT OF THE DETENTION FACILITY UPON FINAL STABILIZATION OF THE SITE AS PART OF ACCEPTANCE OF THE UNIT 1 PUBLIC IMPROVEMENTS.
2. CONTRACTOR TO HYDROMULCH ENTIRE DISTURBED LIMITS OF EARTHEN PORTION OF POND. 85% OF POND SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF SEGUIN & GUADALUPE COUNTY.
3. THE CONTRACTOR SHALL NOTIFY A UTILITY LOCATOR AT LEAST 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION ACTIVITY ADJACENT TO THE CONSTRUCTION OF ANY ON-SITE DRAINAGE FACILITIES TO PROTECT ANY UNIDENTIFIED EXISTING UNDERGROUND UTILITY FACILITY FROM DAMAGE OR HARM. THE CONTRACTOR SHALL HAVE THE SOLE RESPONSIBILITY FOR ANY DAMAGES TO UTILITIES AS A RESULT OF NOT LOCATING UNDERGROUND UTILITY RESOURCES.
4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY OF SEGUIN PUBLIC WORKS DEPARTMENT.
5. ANY AREAS EXPOSED TO HIGH VELOCITY FLOWS SHALL EITHER HAVE A 6" THICK ROCK GABION MATTRESS INSTALLED OR THE INSTALLATION OF APPROPRIATE GEOTECHNICAL LINER AS DIRECTED BY THE CONSTRUCTION ENGINEER IN CHARGE.
6. ALL CONCRETE SHALL BE A MINIMUM OF 3500 PSI @ 28 DAYS COMPRESSIVE STRENGTH UNLESS OTHERWISE SPECIFIED HEREIN ON THESE DOCUMENTS.
7. EXCAVATION AND STORMWATER ROUTING OF DETENTION/RETENTION PONDS MUST BE COMPLETED PRIOR TO THE INSTALLATION OF ANY IMPERVIOUS COVER ON SITE AS NECESSARY TO MITIGATE INCREASES IN RUNOFF.
8. A GEOTECHNICAL ENGINEER SHALL ASSESS THE NATIVE MATERIAL AND PROVIDE THE FINAL RECOMMENDATION TO THE CONTRACTOR. THE CONTRACTOR IS REQUIRED FOR PROVIDING SUCH DOCUMENTATION TO THE ENGINEER OF RECORD AND CITY OF SEGUIN PUBLIC WORKS DEPARTMENT PRIOR TO COMPLETION OF THE POND.



CONCRETE RIP-RAP DETAIL
N.T.S.



PILOT CHANNEL DETAIL
(N.T.S.)



WOODEN PRIVACY FENCE DETAIL
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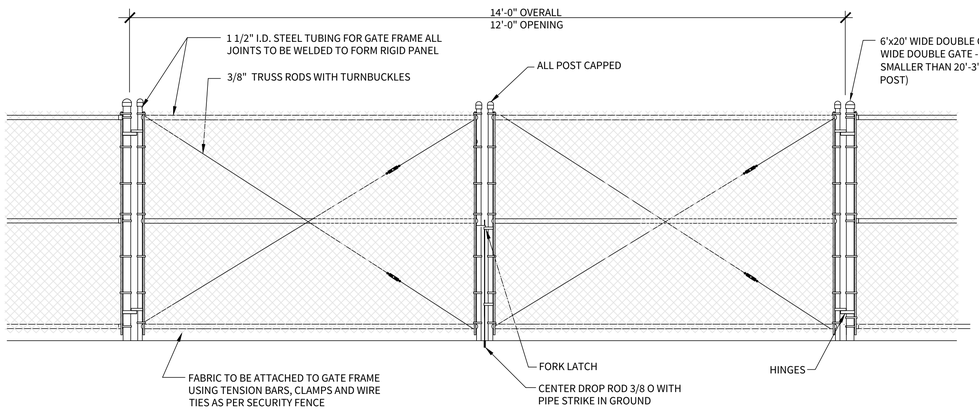
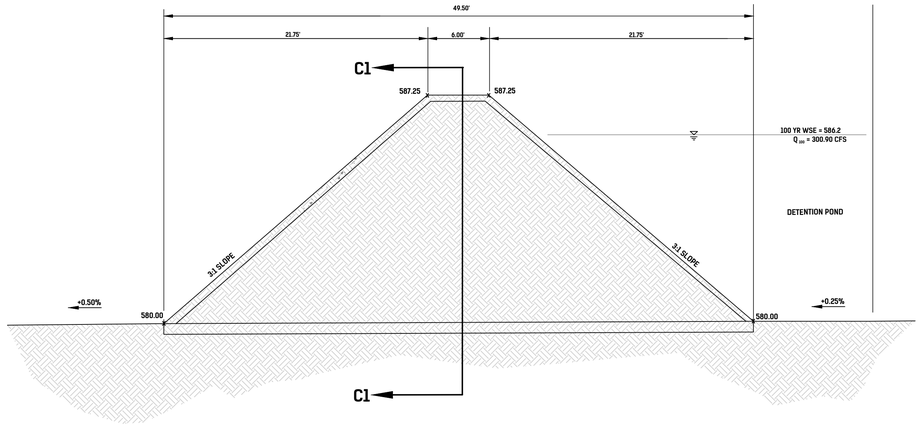


CHAIN LINK FENCE GATE DETAIL
NTS



SECTION C-C
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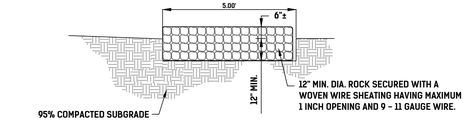
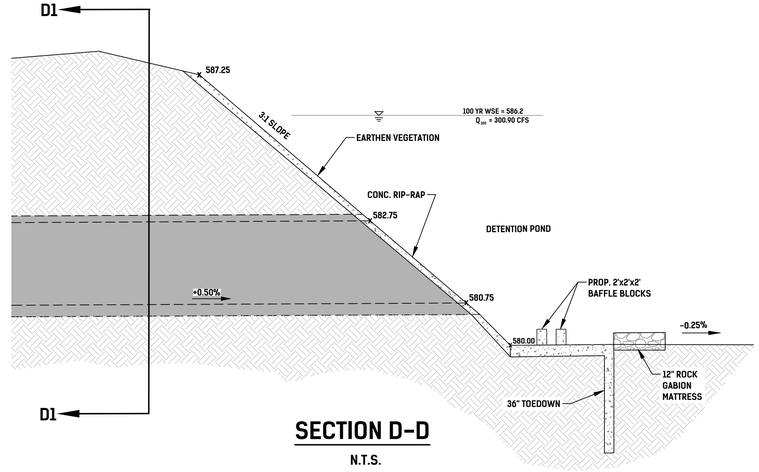


NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.

GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL
N.T.S.

SECTION C1-C1
N.T.S.



SECTION D-D
N.T.S.

BAFFLE BLOCK CALCULATIONS

$Y_1 = 2.00$ FT

$V_1 = 5.04$ FPS

$F_1 = V_1 / (\sqrt{(Y_1)}(32.2\ FT/S^2)) = 0.63$

$Y_2/Y_1 = \frac{1}{2}(\sqrt{1+8(F_1)^2})-1) = 0.52$

$Y_2 = 1.04$ FT

$Q_1 = 137.21$ CFS

BOTTOM WIDTH (B) = 14.2 FT

$V_2 = Q_1 / ((Y_2)(B)) = 4.84$ FPS

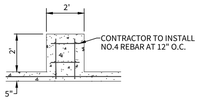
$F_2 = V_2 / (\sqrt{(Y_2)}(32.2\ FT/S^2)) = 0.60$

BASIN LENGTH = $4.5(Y_2) / (F_1)^{0.76} = 6.65$ FT = 7.00 FT

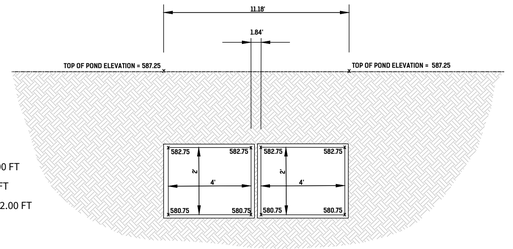
WIDTH OF BLOCKS = $0.75\ (Y_1) = 1.50$ FT = 2.00 FT

SPACE BETWEEN BLOCKS $0.75\ (Y_1) = 1.50$ FT = 2.00 FT

HEIGHT OF BLOCKS = $Y_1 = 2$ FT = 2.00 FT



BAFFLE BLOCK POND REINFORCEMENT DETAIL
(N.T.S.)



SECTION D1-D1
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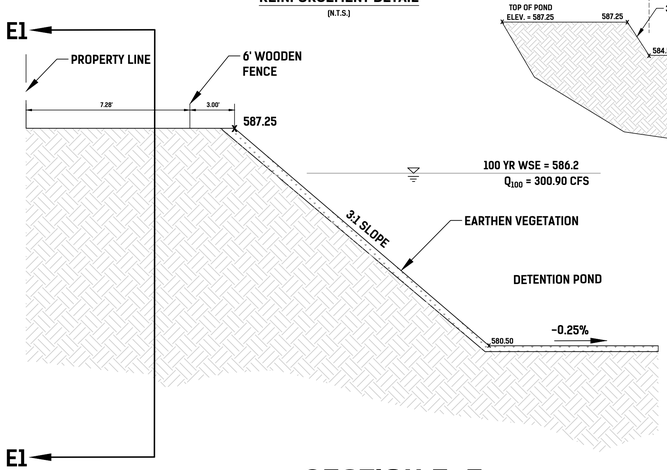

SECTION E-E
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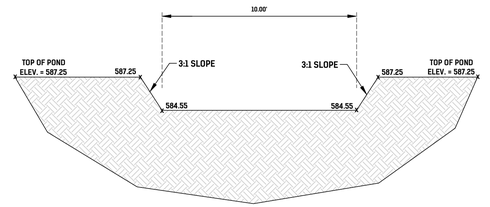

SECTION E1-E1
N.T.S.

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PARK HOUSE UNIT 1

DETENTION POND PLAN

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1 2 3 4 5 6 7 8

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C6.08A

E:\04154\001\DWG\Plans\Sheets\DETENTION POND PLAN.dwg, 8/25/2025 5:37:21 pm, sgonzales

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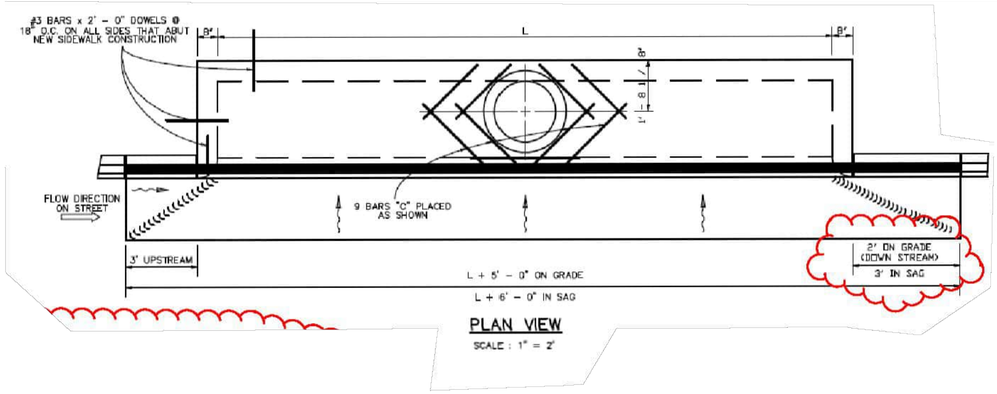
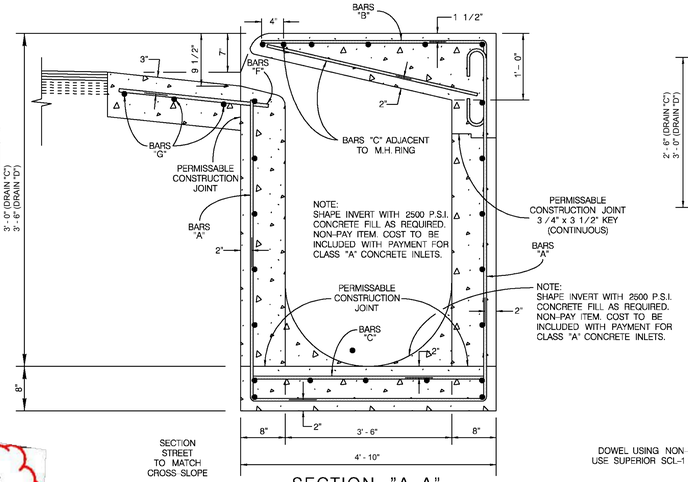


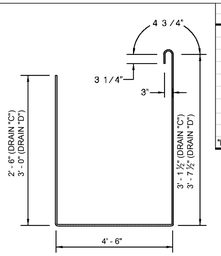
PLAN VIEW

SCALE : 1" = 2'



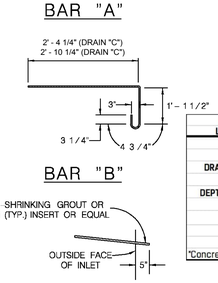
SECTION "A-A"

SCALE : 1" = 1'



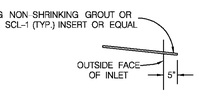
BAR "A"

INLET LENGTH		REINFORCING STEEL SCHEDULE					
		BAR	No.	Size	Spa.	Length	Weight lbs.
		A	39	4	5" o.c.	10' 9 1/2"	281.14
DRAIN "C"		B	39	4	5"	4' 1 3/4"	108.01
L= 15'		C	39	4	9"	4' 6"	117.23
DEPTH= 3'		D	20	4	10"	16' 1"	214.87
		E	12	4	10 1/2"	4' 10"	38.74
		F	17	5	12"	2' 3"	39.89
		G	3	4	12"	19' 8"	39.41
		H	5	5	12"	1' 8"	8.69
*Concrete Total = 6.74 C.Y.		Manhole Casting = 260 lbs.				Steel Total = 1108 lbs.	

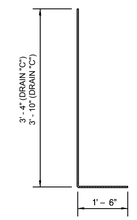


BAR "B"

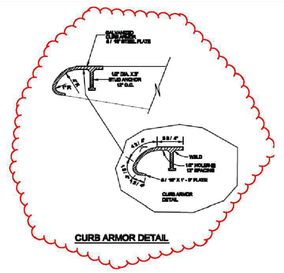
INLET LENGTH		REINFORCING STEEL SCHEDULE					
		BAR	No.	Size	Spa.	Length	Weight lbs.
		A	75	4	5" o.c.	11' 9 1/2"	590.76
DRAIN "D"		B	75	4	5"	4' 7 3/4"	232.76
L= 30'		C	60	4	9"	4' 6"	180.36
DEPTH= 3.5'		D	21	4	10"	31' 1"	436.04
		E	12	4	10 1/2"	5' 4"	42.75
		F	32	5	12"	2' 3"	75.10
		G	3	4	12"	34' 8"	69.47
		H	5	5	12"	1' 8"	8.69
*Concrete Total = 13.48 C.Y.		Manhole Casting = 260 lbs.				Steel Total = 1895.93 lbs.	



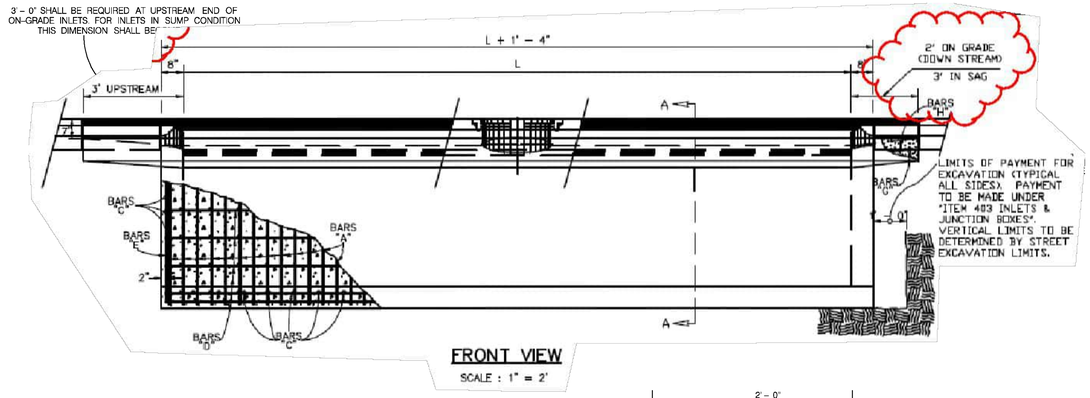
BAR "F"



BAR "E"

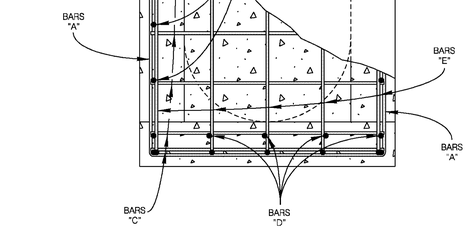


* THESE FIGURES DO NOT EXCLUDE CONCRETE & STEEL INTERCEPTED BY MANHOLE AND REINFORCED CONC
* INCLUDES CONCRETE GUTTER FOR ON GRADE INLET. REDUCE BY .06 C.Y. FOR INLETS IN SUMP.



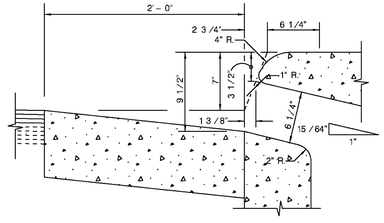
FRONT VIEW

SCALE : 1" = 2'



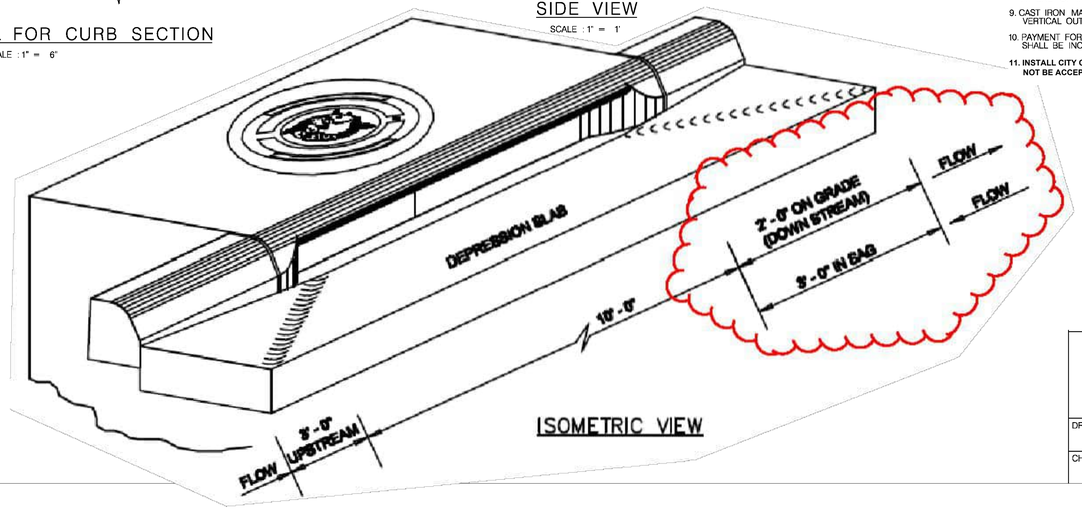
SIDE VIEW

SCALE : 1" = 1'



OPENING DETAIL FOR CURB SECTION

SCALE : 1" = 6"



ISOMETRIC VIEW

GENERAL NOTES

1. ALL BARS INTERCEPTING MANHOLE RING & REINFORCING CONCRETE PIPE SHALL BE FIELD CUT.
2. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
3. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER BARS.
4. ALL EXPOSED CORNERS SHALL BE CHAMFERED TO 3 /4"
5. CONSTRUCTION JOINT SHOWN AT FLOWLINE MAY BE RAISED A MAXIMUM OF 6" AT THE CONTRACTOR'S DISCRETION. ADJUST LENGTH OF VERTICAL STEEL AS REQUIRED.
6. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A 615, GRADE 60 REQUIREMENTS.
7. INVERT OF DROP INLET TO BE SHAPED WITH CONCRETE FILL TO AFFECT DRAINAGE TO OUTLET PIPE.
8. DELETE 4 "C" BARS FROM SCHEDULE QUANTITIES IF MANHOLE RING AND COVER ARE PLACED AT END OF INLET.
9. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
10. PAYMENT FOR ALL EXCAVATION, BACK FILLING, CONCRETE, REINFORCING STEEL, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".
11. **INSTALL CITY OF SEGUIN MANHOLE COVERS FOR ALL INLETS WITHIN THIS DEVELOPMENT. TXDOT COVERS WILL NOT BE ACCEPTED AT TIME OF SUBSTANTIAL COMPLETION OF THE UNIT 1 PUBLIC IMPROVEMENTS.**

TYPE "C" INLET DETAILS

DRAWN BY: V. VASQUEZ	DATE	REVISIONS	SCALE: SEE ABOVE
CHECKED BY: NAT HARDY, P.E.			DATE:
			SHEET: OF

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PARK HOUSE UNIT 1

MISCELLANEOUS DRAINAGE DETAILS

DATE 08/07/2025

PROJECT NO. 04154-000

DRAWN BY SG/JVA

CHECKED BY JL/AC

REVISIONS 1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C6.D1

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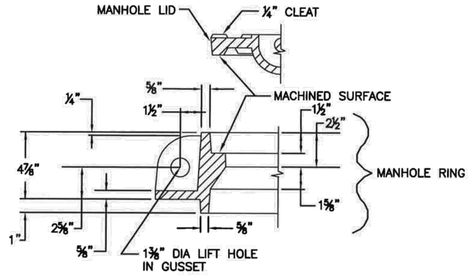
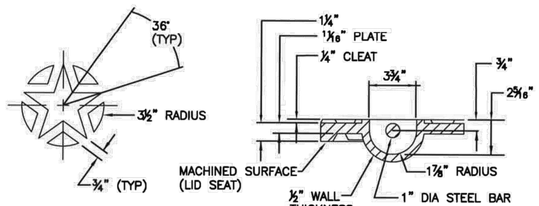


LIFT HOLE DETAIL



STAR LAYOUT

PICK BAR DETAIL

NOTES:

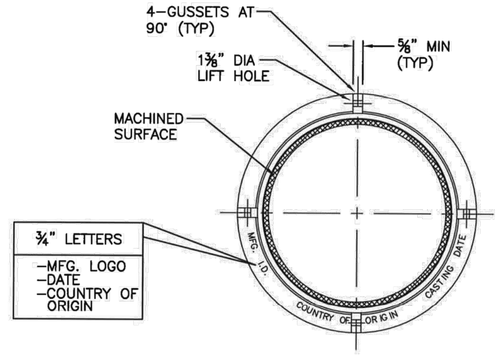
1. ALL CORNERS AND EDGES SHALL HAVE A ⅛" MINIMUM RADIUS.
2. LIDS SHALL BE CAST WITH TWO 1" DIA STEEL PICK BARS.
3. LID WEIGHTS SHALL BE 210 LBS FOR CAST IRON OR 175 LBS FOR DUCTILE IRON. WEIGHT SHALL BE CAST ON BOTH TOP AND BOTTOM OF LID.
4. MANUFACTURER SHALL PROVIDE INDEPENDENT TESTING LABORATORY REPORT ON 25,000 POUND PROOF LOAD TEST CONDUCTED ACCORDING TO AASHTO M-306.
5. FILLETS SHALL BE ¼" RADIUS UNLESS OTHERWISE SPECIFIED.
6. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.

SEGUIN TEXAS
It's real.

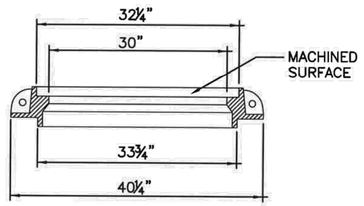
DATE ISSUED: JUNE 1, 2013		
REV	DATE	BY

TITLE: STORM SEWER MANHOLE RING AND COVER SHEET 3 OF 3

SCALE: N.T.S. | DRAWING No. STM-6



MANHOLE RING



RING SECTION

SEGUIN TEXAS
It's real.

DATE ISSUED: JUNE 1, 2013		
REV	DATE	BY

TITLE: STORM SEWER MANHOLE RING AND COVER SHEET 2 OF 3

SCALE: N.T.S. | DRAWING No. STM-5

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PARK HOUSE UNIT 1

MISCELLANEOUS DRAINAGE DETAILS

DATE
08/07/2025

PROJECT NO.
04154-000

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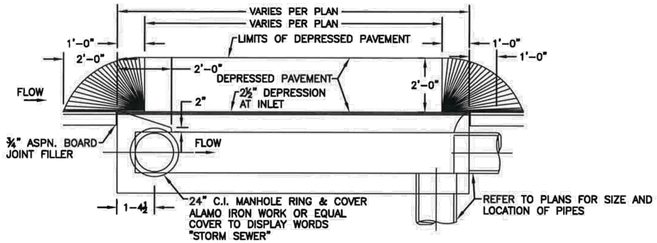
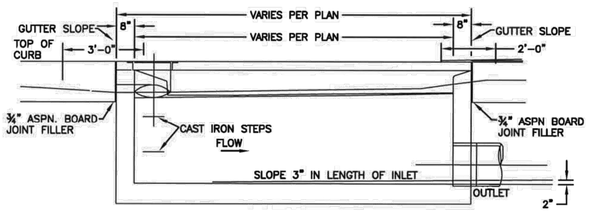


PLAN STORM SEWER CURB INLET DETAIL
SUGGESTED CONFIGURATION



ELEVATION STORM SEWER CURB INLET DETAIL
SUGGESTED CONFIGURATION

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DATE ISSUED: JUNE 1, 2013		
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TITLE: STORM SEWER CURB INLET

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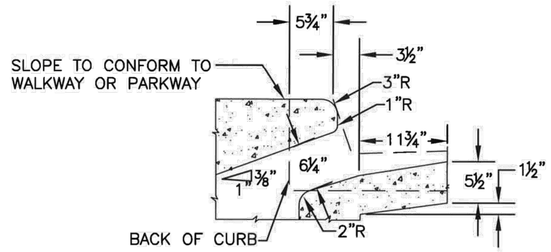
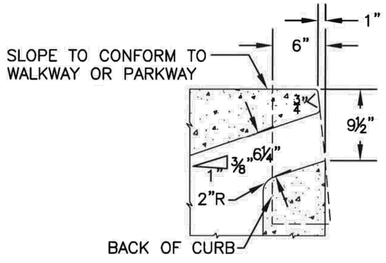


OPENING DETAIL FOR CURB AND GUTTER SECTION



OPENING DETAIL FOR CURB SECTION

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PARK HOUSE UNIT 1

MISCELLANEOUS DRAINAGE DETAILS

DATE 08/07/2025
PROJECT NO. 04154-000
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REVISIONS 1. 2. 3. 4. 5. 6. 7. 8.

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PARK HOUSE
UNIT 1

MISCELLANEOUS DRAINAGE DETAILS

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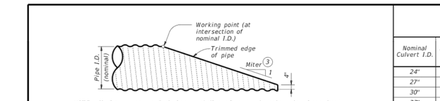
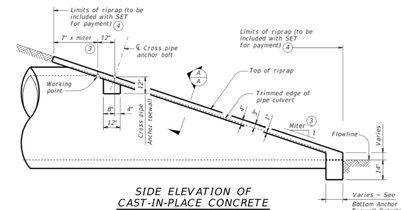


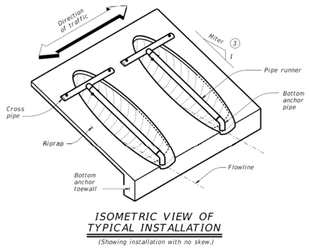
SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing corrugated metal pipe (CMP) culvert. Details of reinforced concrete pipe (RCP) culvert are similar.)



SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert. Details of corrugated metal pipe (CMP) culvert are similar. Pipe runners not shown for clarity)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing installation with no skew.)

CROSS PIPE LENGTHS AND PIPE RUNNER LENGTHS (1) (2)

Nominal Culvert I.D.	Pipe Culvert Spa – G	Cross Pipe Length	Pipe Runner Length: 3:1 Side Slope 0° Skew	3:1 Side Slope 15° Skew	3:1 Side Slope 30° Skew	3:1 Side Slope 45° Skew	4:1 Side Slope 0° Skew	4:1 Side Slope 15° Skew	4:1 Side Slope 30° Skew	4:1 Side Slope 45° Skew	6:1 Side Slope 0° Skew	6:1 Side Slope 15° Skew	6:1 Side Slope 30° Skew	6:1 Side Slope 45° Skew
24"	1' – 7"	3' – 5"	N/A	N/A	N/A	5' – 10"	N/A	N/A	N/A	8' – 7"	N/A	N/A	N/A	12' – 9"
27"	1' – 8"	3' – 8"	N/A	N/A	5' – 5"	6' – 11"	N/A	N/A	7' – 7"	9' – 7"	N/A	N/A	11' – 11"	14' – 11"
30"	1' – 10"	3' – 11"	N/A	N/A	6' – 4"	8' – 0"	N/A	N/A	8' – 9"	11' – 0"	N/A	N/A	13' – 8"	17' – 0"
33"	1' – 11"	4' – 2"	6' – 2"	6' – 5"	7' – 3"	9' – 1"	8' – 6"	8' – 10"	10' – 0"	12' – 5"	13' – 3"	13' – 9"	15' – 5"	19' – 2"
36"	2' – 1"	4' – 5"	6' – 11"	7' – 3"	8' – 2"	10' – 2"	9' – 6"	9' – 11"	11' – 2"	13' – 10"	14' – 9"	15' – 3"	17' – 2"	21' – 3"
42"	2' – 4"	4' – 11"	8' – 6"	8' – 10"	9' – 11"	12' – 4"	11' – 7"	12' – 0"	13' – 6"	16' – 8"	17' – 9"	18' – 5"	20' – 8"	25' – 7"
48"	2' – 7"	5' – 5"	10' – 1"	10' – 5"	11' – 9"	N/A	13' – 7"	14' – 2"	15' – 10"	N/A	20' – 9"	21' – 6"	24' – 2"	N/A
54"	3' – 0"	5' – 11"	11' – 8"	12' – 1"	N/A	N/A	15' – 8"	16' – 3"	N/A	N/A	23' – 10"	24' – 8"	N/A	N/A
60"	3' – 3"	6' – 5"	13' – 3"	N/A	N/A	N/A	17' – 9"	N/A	N/A	N/A	26' – 10"	N/A	N/A	N/A

TYPICAL PIPE CULVERT MITERS (3)

Side Slope	0° Skew	15° Skew	30° Skew	45° Skew
3:1	3:1	3.106:1	3.464:1	4.243:1
4:1	4:1	4.141:1	4.619:1	5.657:1
6:1	6:1	6.212:1	6.928:1	8.485:1

CONDITIONS WHERE PIPE RUNNERS ARE NOT REQUIRED (2)

Nominal Culvert I.D.	Single Pipe Culvert	Multiple Pipe Culverts
12" thru 21"	Skews thru 45°	Skews thru 45°
24"	Skews thru 45°	Skews thru 30°
27"	Skews thru 30°	Skews thru 15°
30"	Skews thru 15°	Skews thru 15°
33"	Skews thru 15°	Always required
36"	Normal (no skew)	Always required
42" thru 60"	Always required	Always required

STANDARD PIPE SIZES AND MAX PIPE RUNNER LENGTHS (1)

Pipe Size	Pipe O.D.	Pipe I.D.	Max Pipe Runner Length
2" STD	2.375"	2.067"	N/A
3" STD	3.500"	3.068"	10' – 0"
4" STD	4.500"	4.026"	19' – 8"
5" STD	5.563"	5.047"	34' – 2"

ESTIMATED CONCRETE RIPRAP QUANTITIES (CY) (5)

Nominal Culvert I.D.	3:1 Side Slope 0° Skew	3:1 Side Slope 15° Skew	3:1 Side Slope 30° Skew	3:1 Side Slope 45° Skew	4:1 Side Slope 0° Skew	4:1 Side Slope 15° Skew	4:1 Side Slope 30° Skew	4:1 Side Slope 45° Skew	6:1 Side Slope 0° Skew	6:1 Side Slope 15° Skew	6:1 Side Slope 30° Skew	6:1 Side Slope 45° Skew
12"	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.8
15"	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9
18"	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	1.0
21"	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.2
24"	0.6	0.7	0.7	0.8	0.8	0.8	0.8	1.0	1.0	1.0	1.1	1.3
27"	0.7	0.7	0.8	0.9	0.8	0.9	0.9	1.1	1.1	1.1	1.2	1.4
30"	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.2	1.2	1.2	1.3	1.6
33"	0.8	0.8	0.9	1.0	1.0	1.0	1.1	1.3	1.3	1.4	1.5	1.7
36"	0.9	0.9	0.9	1.1	1.1	1.1	1.2	1.4	1.4	1.5	1.6	1.8
42"	1.0	1.0	1.1	1.3	1.2	1.3	1.3	1.6	1.6	1.7	1.8	2.1
48"	1.1	1.1	1.2	N/A	1.4	1.4	1.5	N/A	1.9	1.9	2.1	N/A
54"	1.3	1.3	N/A	N/A	1.6	1.6	N/A	N/A	2.1	2.1	N/A	N/A
60"	1.4	N/A	N/A	N/A	1.7	N/A	N/A	N/A	2.3	N/A	N/A	N/A

(1) Provide pipe runner of the size shown in the tables. Provide cross pipe of the same size as the pipe runner. Provide cross pipe stub out and bottom anchor pipe of the next smaller size pipe as shown in the Standard Pipe Sizes and Max Pipe Runner Lengths table.

(2) This standard allows for the placement of only one pipe runner across each culvert pipe opening. In order to limit the clear opening to be traversed by an errant vehicle, the following conditions must be met:

For 60" culvert pipes, the skew must not exceed 0°.
For 54" culvert pipes, the skew must not exceed 15°.
For 48" culvert pipes, the skew must not exceed 30°.
For all culvert pipe sizes 42" and less, the skew must not exceed 45°.

If the above conditions cannot be met, the designer should consider using a safety end treatment with flared wings. For further information, refer to the TxDOT Roadway Design Manual.

(3) Miter = slope of mitered end of pipe culvert.

(4) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(5) Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

SHEET 1 OF 2

Texas Department of Transportation | Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE

SETP-CD

FILE:	setpctse-20.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
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REVISIONS		DIST	COUNTY		SHEET NO.

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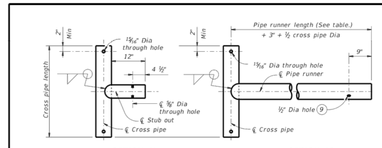
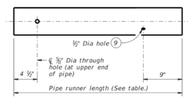
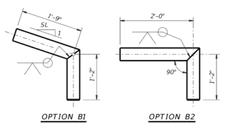


CROSS PIPE AND CONNECTIONS DETAILS



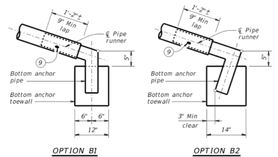
NOTE: The separate pipe runner shown is required when Cross Pipe Connection Option A1 is used.

PIPE RUNNER DETAILS



OPTION B1 OPTION B2

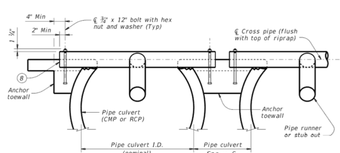
BOTTOM ANCHOR PIPE DETAILS (10)



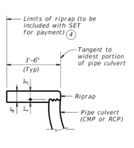
OPTION B1 OPTION B2

BOTTOM ANCHOR TOEWALL DETAILS

(Culvert and riprap not shown for clarity.)

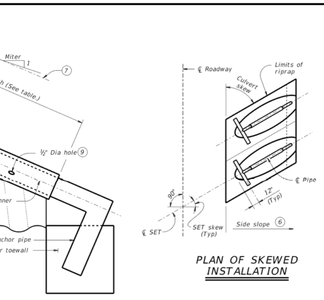


SHOWING CROSS PIPE AND ANCHOR TOEWALL



SHOWING TYPICAL PIPE CULVERT AND RIPRAP

SECTION A-A



SIDE ELEVATION OF SAFETY END TREATMENT INSTALLATION

(Showing pipe runner with Cross Pipe Connection Option A1 and Anchor Pipe Option B2 on corrugated metal pipe (CMP) culvert. Reinforced concrete pipe culvert (RCP) details are similar. Riprap not shown for clarity)

PLAN OF SKEWED INSTALLATION

(4) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(6) Recommended values of side slope are 3:1, 4:1, and 6:1. All quantities, calculations, and dimensions shown herein are based on these recommended values. Slope of 3:1 or flatter is required for vehicle safety.

(7) Note that actual slope of pipe runner may vary slightly from side slope of riprap and trimmed culvert pipe edge.

(8) Ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access.

(9) After installation, inspect the ½" hole to ensure that the lap of the pipe runner with the bottom anchor pipe is adequate.

(10) At fabricator's option, a heat bend to a smooth 5° radius or a manufactured elbow (of the same material as the runner) may be substituted for the mitered and welded joint in the bottom anchor pipe.

MATERIAL NOTES:
Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.
Provide pipe runners, cross pipes, and anchor pipes conforming to the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5L X52.
Provide ASTM A307 bolts and nuts.
Galvanize all steel components, except concrete reinforcing, after fabrication.
Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:
Pipe runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.
Safety end treatments (SET) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the pipe runners.
Payment for riprap and toewall is included in the price bid for each safety end treatment.
Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap".

SHEET 2 OF 2

Texas Department of Transportation | Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE

SETP-CD

FILE:	setpctse-20.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
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TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (5)

Skew	Dia. of Pipe (D)	Values for One Pipe						Values to be Added for Each Add'l Pipe		
		W	X	Y	L	Reinf (Lbs)	Conc (CY) (1)	X and W	Reinf (Lbs)	Conc (CY) (1)
0°	12"	4'-7 1/2"	2'-6"	2'-10"	3'-3 1/8"	88	0.6	1'-9"	20	0.2
	15"	5'-5 5/8"	2'-9 1/2"	3'-4"	3'-10 1/2"	103	0.7	2'-2"	24	0.3
	18"	6'-4 1/2"	3'-1"	3'-10"	4'-5"	124	0.9	2'-8"	32	0.3
	21"	7'-2 3/8"	3'-4 5/8"	4'-4"	5'-0"	143	1.1	3'-1"	43	0.4
	24"	8'-2 1/2"	3'-9 1/2"	4'-10"	5'-7"	164	1.3	3'-7"	50	0.5
	27"	9'-1"	4'-1"	5'-4"	6'-2"	179	1.5	3'-11"	56	0.6
	30"	9'-11 1/2"	4'-4 5/8"	5'-10"	6'-8 3/4"	203	1.7	4'-4"	65	0.8
	33"	10'-10"	4'-8"	6'-4"	7'-3 3/8"	224	2.0	4'-8"	71	0.9
	36"	11'-8 5/8"	4'-11 1/2"	6'-10"	7'-10 3/4"	249	2.2	5'-1"	81	1.0
	42"	13'-5 1/2"	5'-6 1/2"	7'-10"	9'-0 1/2"	298	2.8	5'-10"	97	1.3
	48"	15'-9"	6'-1 1/2"	9'-4"	10'-9 1/2"	360	3.8	6'-7"	117	1.7
	54"	17'-5 3/4"	6'-8 1/2"	10'-4"	11'-11 1/2"	427	4.5	7'-6"	151	2.1
	60"	19'-2 3/4"	7'-3 1/2"	11'-4"	13'-1"	481	5.3	8'-3"	174	2.5
	66"	20'-11 1/2"	7'-10 1/2"	12'-4"	14'-3"	544	6.2	8'-9"	194	2.9
	72"	22'-8 1/2"	8'-5 1/2"	13'-4"	15'-4 3/4"	601	7.1	9'-4"	213	3.3
22.5°	12"	6'-3"	2'-6"	4'-3"	4'-11"	118	0.8	1'-9"	23	0.2
	15"	7'-5"	2'-9 1/2"	5'-0"	5'-9 1/8"	137	1.1	2'-2"	28	0.3
	18"	8'-6 3/4"	3'-1"	5'-9"	6'-7 3/8"	170	1.3	2'-8"	37	0.5
	21"	9'-8 3/4"	3'-4 1/2"	6'-6"	7'-6"	195	1.6	3'-1"	48	0.6
	24"	11'-0"	3'-9 1/2"	7'-3"	8'-4 1/2"	227	2.0	3'-7"	58	0.7
	27"	12'-2"	4'-1"	8'-0"	9'-2 3/8"	251	2.3	3'-11"	67	0.8
	30"	13'-4"	4'-4 1/2"	8'-9"	10'-1 1/8"	293	2.7	4'-4"	77	1.0
	33"	14'-5 3/4"	4'-8"	9'-6"	10'-11 3/4"	318	3.1	4'-8"	84	1.2
	36"	15'-7 3/4"	4'-11 1/2"	10'-3"	11'-10"	351	3.5	5'-1"	96	1.4
	42"	17'-11 1/2"	5'-6 1/2"	11'-9"	13'-6 3/4"	432	4.5	5'-10"	119	1.7
	48"	21'-1 3/4"	6'-1 1/2"	14'-0"	16'-2"	537	6.1	6'-7"	146	2.3
	54"	23'-5 1/2"	6'-8 1/2"	15'-6"	17'-10 3/4"	630	7.3	7'-6"	186	2.9
	60"	25'-9 1/4"	7'-3 1/2"	17'-0"	19'-7 1/2"	719	8.7	8'-3"	219	3.4
	66"	28'-1"	7'-10 1/2"	18'-6"	21'-4 1/2"	811	10.1	8'-9"	242	3.9
	72"	30'-4 3/4"	8'-5 1/2"	20'-0"	23'-1 1/8"	924	11.7	9'-4"	272	4.4
45°	12"	7'-10 3/4"	2'-6"	5'-8"	6'-6 1/2"	148	1.1	1'-9"	24	0.3
	15"	9'-4"	2'-9 1/2"	6'-8"	7'-8 1/2"	181	1.5	2'-2"	32	0.4
	18"	10'-9 1/2"	3'-1"	7'-8"	8'-10 1/2"	221	1.9	2'-8"	42	0.5
	21"	12'-2 3/4"	3'-4 1/2"	8'-8"	10'-0"	260	2.3	3'-1"	57	0.7
	24"	13'-9 1/2"	3'-9 1/2"	9'-8"	11'-2"	301	2.8	3'-7"	67	0.9
	27"	15'-3"	4'-1"	10'-8"	12'-3 3/4"	334	3.3	3'-11"	77	1.0
	30"	16'-8 1/2"	4'-4 1/2"	11'-8"	13'-5 3/4"	385	3.9	4'-4"	89	1.3
	33"	18'-1 3/4"	4'-8"	12'-8"	14'-7 1/2"	425	4.5	4'-8"	101	1.4
	36"	19'-7"	4'-11 1/2"	13'-8"	15'-9 1/8"	472	5.1	5'-1"	115	1.7
	42"	22'-5 3/4"	5'-6 1/2"	15'-8"	18'-1"	583	6.5	5'-10"	141	2.1
	48"	26'-6 1/2"	6'-1 1/2"	18'-8"	21'-6 3/4"	730	8.9	6'-7"	175	2.8
	54"	29'-5"	6'-8 1/2"	20'-8"	23'-10 1/2"	875	10.7	7'-6"	208	3.6
	60"	32'-3 3/4"	7'-3 1/2"	22'-8"	26'-2"	996	12.7	8'-3"	264	4.3
	66"	35'-2 1/2"	7'-10 1/2"	24'-8"	28'-5 3/4"	1,140	14.9	8'-9"	300	4.9
	72"	38'-1 1/4"	8'-5 1/2"	26'-8"	30'-9 1/2"	1,291	17.3	9'-4"	334	5.6
67.5°	12"	11'-2"	2'-6"	8'-6"	9'-9 3/4"	124	1.9	1'-9"	28	0.4
	15"	13'-2 1/2"	2'-9 1/2"	10'-0"	11'-6 1/2"	268	2.5	2'-2"	37	0.5
	18"	15'-2 1/2"	3'-1"	11'-6"	13'-3 1/8"	330	3.2	2'-8"	50	0.7
	21"	17'-2 3/8"	3'-4 1/2"	13'-0"	15'-0 1/4"	387	3.9	3'-1"	69	0.9
	24"	19'-4 1/2"	3'-9 1/2"	14'-6"	16'-9"	453	4.8	3'-7"	80	1.2
	27"	21'-4 3/8"	4'-1"	16'-0"	18'-5 3/8"	512	5.7	3'-11"	96	1.4
	30"	23'-5 1/2"	4'-4 1/2"	17'-6"	20'-2 1/2"	593	6.7	4'-4"	110	1.7
	33"	25'-5 1/2"	4'-8"	19'-0"	21'-11 1/8"	675	7.8	4'-8"	127	2.0
	36"	27'-5 1/2"	4'-11 1/2"	20'-6"	23'-8"	735	9.0	5'-1"	144	2.3
	42"	31'-6 1/2"	5'-6 1/2"	23'-6"	27'-1 1/2"	922	11.5	5'-10"	179	3.0
	48"	37'-3 1/2"	6'-1 1/2"	28'-0"	32'-4"	1,191	15.9	6'-7"	231	4.0
	54"	41'-4 1/2"	6'-8 1/2"	31'-0"	35'-9 1/2"	1,424	19.2	7'-6"	300	5.0
	60"	45'-4 3/4"	7'-3 1/2"	34'-0"	39'-3"	1,631	22.9	8'-3"	353	6.0

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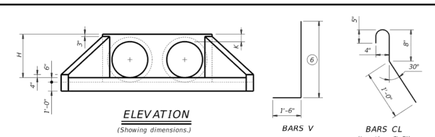
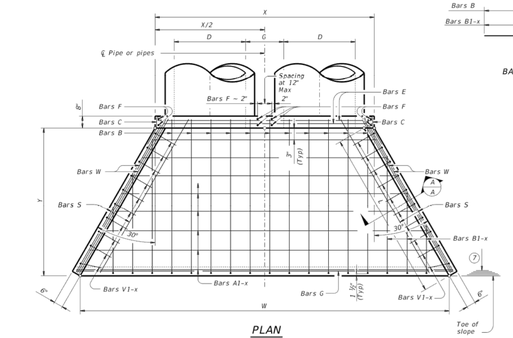


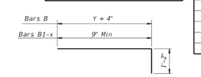
ELEVATION
(Showing dimensions.)

BARS V

BARS CL
(Length = 2'-5")



PLAN



BARS B and B1-x

1. Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
2. For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
3. Provide a 1'-0" footing as shown where required to maintain 4" minimum cover for pipes.
4. Dimensions shown are usual and maximum.
5. Quantities shown are for one structure end only (one headwall).
6. Min Length = $6" + 3" \times \left(\frac{12 \times H - 7}{12 \times L}\right)$
   Max Length = $12 \times H - 3" \times \left(\frac{12 \times H - 7}{12 \times L}\right) - 1"$
7. Lengths of wings based on SL:1 slope along this line.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

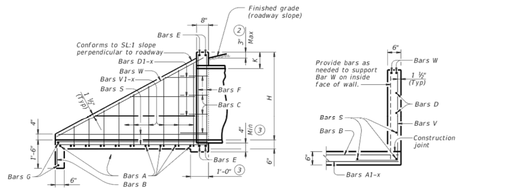
Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

TABLE OF REINFORCING STEEL (5)

Bar	Size	Spa	No.
A	#4	1'-0"	~
B	#3	1'-6"	~
C	#4	1'-0"	~
D	#3	1'-0"	~
E	#5	~	4
F	#5	~	~
G	#3	~	2
S	#4	~	6
V	#4	1'-0"	~
W	#5	~	4

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K (4)	H
12"	0'-9"	1'-0"	2'-0"
15"	0'-11"	1'-0"	2'-3"
18"	1'-2"	1'-0"	2'-6"
21"	1'-4"	1'-0"	2'-9"
24"	1'-7"	1'-0"	3'-0"
27"	1'-8"	1'-0"	3'-3"
30"	1'-10"	1'-0"	3'-6"
33"	1'-11"	1'-0"	3'-9"
36"	2'-1"	1'-0"	4'-0"
42"	2'-4"	1'-0"	4'-6"
48"	2'-7"	1'-3"	5'-3"
54"	3'-0"	1'-3"	5'-9"
60"	3'-3"	1'-3"	6'-3"
66"	3'-3"	1'-3"	6'-9"
72"	3'-4"	1'-3"	7'-3"



TYPICAL WING ELEVATION

SECTION A-A

Texas Department of Transportation — Bridge Division Standard

CONCRETE HEADWALLS WITH FLARED WINGS FOR 0° SKEW PIPE CULVERTS

CH-FW-0

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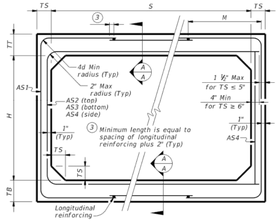
BOX DATA

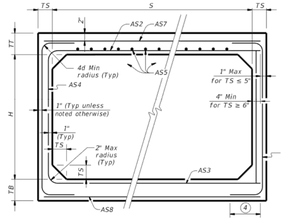
SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
4	2	7.5	6	5	< 2	-	0.18	0.27	0.15	0.12	0.18	0.18	0.14	4.5
4	2	5	5	5	2 < 3	38	0.18	0.19	0.17	0.12	–	–	–	3.6
4	2	5	5	5	3 – 5	38	0.13	0.13	0.13	0.12	–	–	–	3.6
4	2	5	5	5	10	38	0.12	0.12	0.12	0.12	–	–	–	3.6
4	2	5	5	5	15	38	0.14	0.16	0.16	0.12	–	–	–	3.6
4	2	5	5	5	20	38	0.18	0.20	0.21	0.12	–	–	–	3.6
4	2	5	5	5	25	38	0.23	0.25	0.25	0.12	–	–	–	3.6
4	2	5	5	5	30	38	0.28	0.30	0.30	0.12	–	–	–	3.6
4	3	7.5	6	5	< 2	-	0.18	0.31	0.18	0.12	0.18	0.18	0.14	5.0
4	3	5	5	5	2 < 3	38	0.15	0.23	0.20	0.12	–	–	–	4.1
4	3	5	5	5	3 – 5	38	0.12	0.16	0.16	0.12	–	–	–	4.1
4	3	5	5	5	10	38	0.12	0.14	0.14	0.12	–	–	–	4.1
4	3	5	5	5	15	38	0.12	0.18	0.18	0.12	–	–	–	4.1
4	3	5	5	5	20	38	0.14	0.23	0.24	0.12	–	–	–	4.1
4	3	5	5	5	25	38	0.17	0.29	0.29	0.12	–	–	–	4.1
4	3	5	5	5	30	38	0.21	0.35	0.35	0.12	–	–	–	4.1
4	4	7.5	6	5	< 2	-	0.18	0.33	0.20	0.12	0.18	0.18	0.14	5.5
4	4	5	5	5	2 < 3	38	0.12	0.26	0.23	0.12	–	–	–	4.6
4	4	5	5	5	3 – 5	38	0.12	0.18	0.18	0.12	–	–	–	4.6
4	4	5	5	5	10	38	0.12	0.15	0.15	0.12	–	–	–	4.6
4	4	5	5	5	15	38	0.12	0.19	0.20	0.12	–	–	–	4.6
4	4	5	5	5	20	38	0.12	0.25	0.25	0.12	–	–	–	4.6
4	4	5	5	5	25	38	0.14	0.31	0.31	0.12	–	–	–	4.6
4	4	5	5	5	30	38	0.17	0.37	0.37	0.12	–	–	–	4.6

(1) For box length = 8'-0"
(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

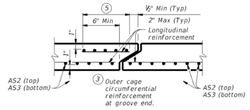
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A
(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS PRECAST 4'-0" SPAN

SCP-4

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CUDEENGINEERS.COM
CUDE ENGINEERS
1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE
UNIT 1

MISCELLANEOUS DRAINAGE DETAILS

DATE
01/08/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

CUDE ENGINEERS
TBPELS No. 10048500

C6.D5

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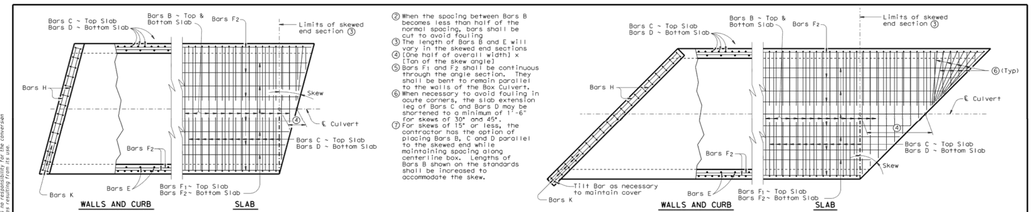

② When the spacing between Bars B becomes less than half of the normal spacing, bars shall be cut to avoid fouling.
③ The length of Bars B and E will vary in the skewed end sections (One half of overall width) x (Tan of the skew angle)
④ Bars F1 and F2 shall be continuous through the angle section. They shall be bent to remain parallel to the walls of the Box Culverts.
⑤ Where necessary, the slab extension leg of Bars C and Bars D may be shortened to a minimum of 1'-6" for skews of 30° and 45°.
⑦ For skews of 15° or less, the contractor has the option of placing Bars B, C and D parallel to the skewed end while maintaining spacing along centerline box. Lengths of Bars B shown on the standards shall be increased to accommodate the skew.

① For box culverts with less than 2'-0" of fill, the top slab shall be broken back to provide a minimum 1'-10" lap of the existing longitudinal bars with the longitudinal bars in the extension. In the design of fill heights 2'-0" or greater, the top slab may be designed for full development length of existing longitudinal reinforcing into the extension. Alternatively, if the fill height is greater than 2'-0", the existing curb may be left in place and 2'-0" long #6 bars shall be drilled and grouted 1'-0" into the existing top slab at 1'-6" center to center spacing. Wings and apron shall be broken back as necessary to install the extension. Exposed wingwall and apron reinforcing may be removed or cleaned and included in the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, horizontal and vertical transitions shall be formed as directed by the Engineer. Bottom slabs shall match to maintain an uninterrupted flow line. Existing and new reinforcing shall be field bent into transition maintaining specified cover requirements.

GENERAL NOTES:
Designed according to AASHTO LRFD Specifications.
All reinforcing steel shall be Grade 60.
All concrete shall be Class "C" with these exceptions: use Class "S" for top slabs of culverts with overlay, with 1-to-2 coursed surface treatment, or with the top slab as the final riding surface.
Class "C" concrete shall have a minimum compressive strength of 3,600 psi. Class "S" concrete shall have a minimum compressive strength of 4,000 psi.
The use of permanent forms is not allowed.
Refer to Single Box Culverts Cast-in-Place standard for details of skewed ends, angle sections, and lengthening. For skewed end angle sections refer to Single Box Culverts Cast-in-Place standard for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown. For Skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume and reinforcing steel weight by dividing the values shown on the culvert standards by the cosine of the skew angle.
Laps for Bars H, when required, shall be 1'-9" for uncoated bars and 2'-7" for epoxy coated.

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Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS

SCC-MD

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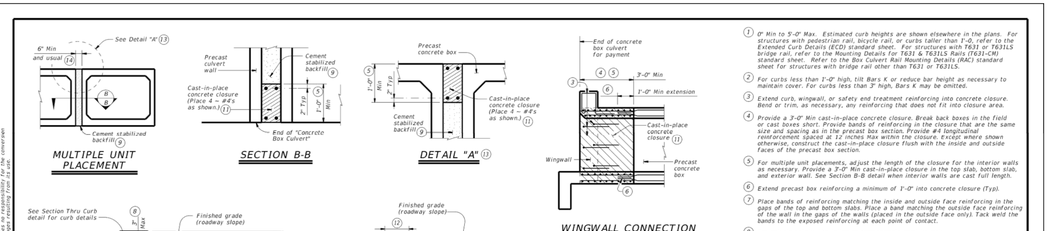
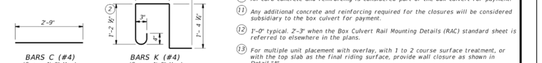
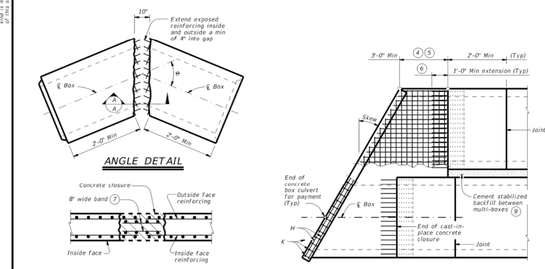


QUANTITIES PER FOOT OF CURB (10)	
Reinforcing Steel	4.12 Lb
Concrete	0.037 CY





① 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

② For curbs less than 1'-0" high, till Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3' high, Bars K may be omitted.

③ Extend curb, wingwall, or safety end treatment reinforcing into concrete closure. Bend or trim, as necessary, any reinforcing that does not fit into closure area.

④ Provide a 3'-0" Min cast-in-place concrete closure. Break back boxes in the field or cast boxes short. Provide bands of reinforcing in the closure that are the same size and spacing as in the precast box section. Provide #4 longitudinal reinforcement spaced at 12 inches Max within the closure. Except where shown otherwise, construct the cast-in-place closure flush with the inside and outside faces of the precast box section.

⑤ For multiple unit placements, adjust the length of the closure for the interior walls as necessary. Provide a 3'-0" Min cast-in-place closure in the top slab, bottom slab, and exterior wall. See Section B-B detail when interior walls are cast full length.

⑥ Extend precast box reinforcing a minimum of 1'-0" into concrete closure (Typ).

⑦ Place bands of reinforcing matching the inside and outside face reinforcing in the gaps of the top and bottom slabs. Place a band matching the outside face reinforcing of the wall in the gaps of the walls (placed in the outside face only). Tack weld the bands to the exposed reinforcing at each point of contact.

⑧ For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

⑨ Cement stabilized backfill between boxes is considered part of the box culvert for payment.

⑩ All curb concrete and reinforcing is considered part of the box culvert for payment.

⑪ Any additional concrete and reinforcing required for the closures will be considered subsidiary to the box culvert for payment.

⑫ 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.

⑬ For multiple unit placement with overlay, with 1 to 2 course surface treatment, or with the top slab as the final riding surface, provide wall closure as shown in Detail "A".

⑭ This dimension may be increased with approval of the Engineer to allow the precast boxes to be tunneled or jacked in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box". No payment will be made for any additional material in the gap between adjacent boxes.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide ASTM A1064 welded wire reinforcement.
Provide Class C concrete (f'_c = 3,600 psi) for the closures.
Provide cement stabilized backfill meeting the requirements of Item 400, "Excavation and Backfill for Structures."
Any additional concrete required for the closures will be considered subsidiary to the box culvert.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to the Single Box Culverts Precast (SCP) standard sheets for details and notes not shown.
Chamfer the bottom edge of the top slab closure 3 inches at culvert closure ends.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bars dimensions are out-to-out of bars.

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

BOX CULVERTS PRECAST MISCELLANEOUS DETAILS

SCP-MD

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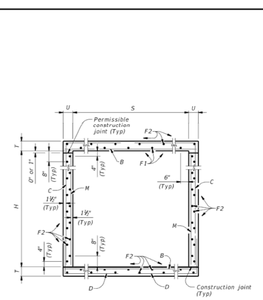
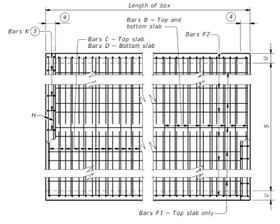
REVISIONS		DIST	COUNTY		SHEET NO.

DISCLAIMER:
The use of this standard is governed by the Texas Engineering Practice Act. No warranty of any kind is made by TxDOT or any person involved in the development of this standard, expressed or implied, as to any matter including but not limited to merchantability or fitness for a particular purpose or the results or damages resulting from its use.

DATE:
FILE:





The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

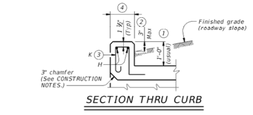
CONSTRUCTION NOTES:
Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'_c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'_c = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

Provide bar tags, where required, as follows:
- Galvanized or galvanized ~ #4 ~ 3'-0" Min
- Uncoated or galvanized ~ #5 ~ 2'-1" Min

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.



HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE 0' TO 30' FILL

SCC-3 & 4

FILE:	scc3to4-21.dgn	DN: TXE	CK: BWP	DW: TxDOT	CK: TxDOT
©TxDOT	February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.
01/2021 Updated K values.					

(5) For direct traffic culverts (Fill height ≤ 2 ft.), identify the required box size and select the option with the minimum Fill height.

SECTION DIMENSIONS				FILL HEIGHT (5)	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																						QUANTITIES			
					Bars B					Bars C					Bars D					Bars M ~ #4				Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa			Bars H 4 ~ #4		Bars K	Per Foot of Barrel		Curb		Total	
S	H	T	U		No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
3'-0"	2'-0"	8"	7"	30°	108	#5	9"	3'-11"	441	108	#4	9"	5'-4"	385	2'-6"	2'-10"	108	#4	9"	5'-1"	367	2'-10"	2'-3"	108	9"	2'-0"	144	3	39'-9"	80	19	39'-9"	505	3'-11"	10	10	28	0.292	48.1	0.3	38	12.0	1,960
3'-0"	3'-0"	8"	7"	30°	108	#5	9"	3'-11"	441	108	#4	9"	6'-4"	457	3'-6"	3'-10"	108	#4	9"	5'-1"	367	2'-10"	2'-3"	108	9"	2'-0"	216	3	39'-9"	80	21	39'-9"	611	3'-11"	10	10	28	0.335	54.3	0.3	38	13.7	2,210
4'-0"	2'-0"	8"	7"	30°	108	#5	9"	4'-11"	554	162	#4	6"	5'-8"	613	3'-6"	3'-2"	162	#4	6"	5'-5"	586	3'-2"	2'-3"	108	9"	2'-0"	144	3	39'-9"	80	23	39'-9"	558	4'-11"	13	12	33	0.342	63.4	0.4	46	14.1	2,581
4'-0"	3'-0"	8"	7"	30°	108	#5	9"	4'-11"	554	162	#4	6"	6'-8"	721	3'-6"	3'-2"	162	#4	6"	5'-5"	586	3'-2"	2'-3"	108	9"	2'-0"	216	3	39'-9"	80	25	39'-9"	664	4'-11"	13	12	33	0.385	70.5	0.4	46	15.8	2,867
4'-0"	4'-0"	8"	7"	30°	108	#5	9"	4'-11"	554	162	#4	6"	7'-8"	830	4'-6"	3'-2"	162	#4	6"	5'-5"	586	3'-2"	2'-3"	108	9"	2'-0"	289	3	39'-9"	80	25	39'-9"	664	4'-11"	13	12	33	0.428	75.1	0.4	46	17.5	3,049

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE 0' TO 30' FILL

SCC-3 & 4

FILE:	scc3to4-21.dgn	DN: TXE	CK: BWP	DW: TxDOT	CK: TxDOT
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REVISIONS		DIST	COUNTY		SHEET NO.
01/2021 Updated K values.					

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San Marcos, Texas 78666
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PARK HOUSE UNIT 1

MISCELLANEOUS DRAINAGE DETAILS

DATE
01/08/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

CUDE ENGINEERS
TBPELS No. 10048500

C6.D6

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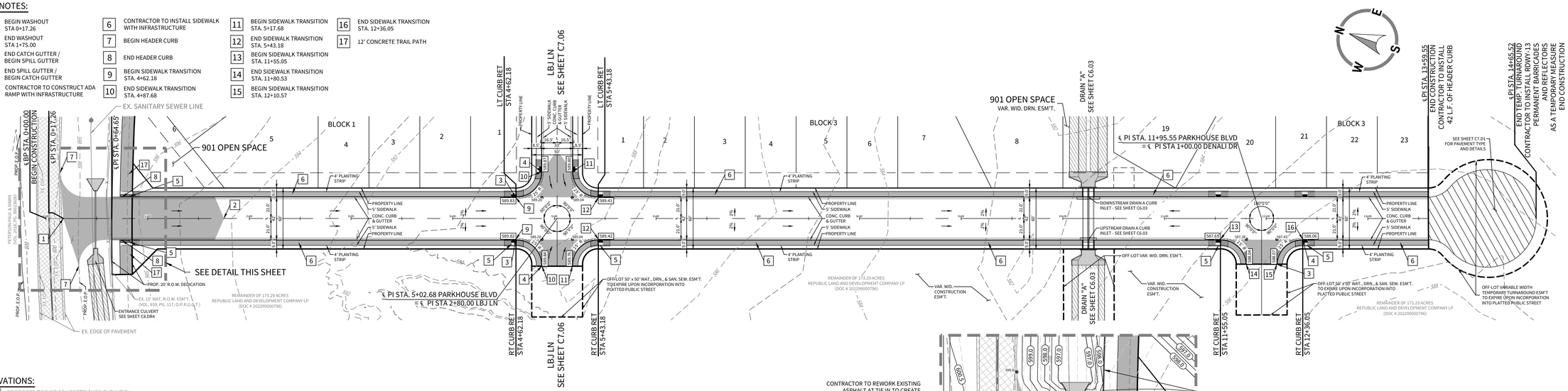
C:\PROJECTS\2025\04154-000\Civil\Sheets\C6.D6_MISCELLANEOUS DRAINAGE DETAILS.dwg 2025/01/08 13:52pm bbennedy
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

KEYNOTES:

1. BEGIN WASHOUT STA 0+17.26
2. END WASHOUT STA 1+75.00
3. END CATCH GUTTER / BEGIN SPILL GUTTER
4. END SPILL GUTTER / BEGIN CATCH GUTTER
5. CONTRACTOR TO CONSTRUCT ADA RAMP WITH INFRASTRUCTURE
6. CONTRACTOR TO INSTALL SIDEWALK WITH INFRASTRUCTURE
7. BEGIN HEADER CURB
8. END HEADER CURB
9. BEGIN SIDEWALK TRANSITION STA. 4+62.18
10. END SIDEWALK TRANSITION STA. 4+87.68
11. BEGIN SIDEWALK TRANSITION STA. 5+17.68
12. END SIDEWALK TRANSITION STA. 5+43.18
13. BEGIN SIDEWALK TRANSITION STA. 11+55.05
14. END SIDEWALK TRANSITION STA. 11+80.53
15. BEGIN SIDEWALK TRANSITION STA. 12+10.57
16. END SIDEWALK TRANSITION STA. 12+36.05
17. 12' CONCRETE TRAIL PATH



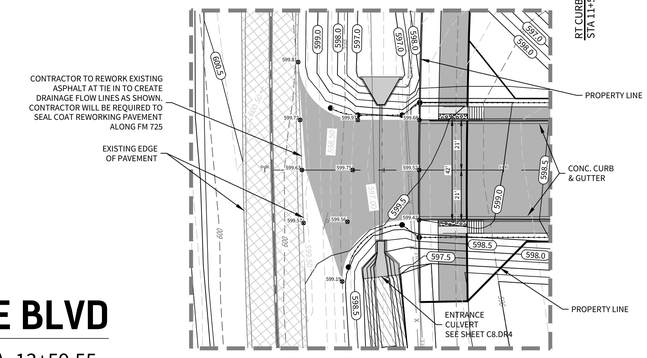
ELEVATIONS:

- XXX.XX — PROPOSED TOP OF CONCRETE CURB ELEVATION
- XXX.XX — PROPOSED ASPHALT PAVEMENT ELEVATION

- PROPOSED DRIVEWAY LOCATION
- CONCRETE RIP-RAP
- 24" R.C.P. DRAIN
- EARTHEN CHANNEL
- STREET WASHOUT
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

PERMIT IS NEEDED TO WORK ON TxDOT R.O.W.
TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " " OR " " UNLESS OTHERWISE NOTED. (SHEET C7.D6)

CAUTION!!
EXISTING UTILITIES ARE WITHIN THE LIMITS OF CONSTRUCTION. CONTRACTORS SHALL EXERCISE EXTRA CARE IN DIGGING ANY TRENCH FOR PROPOSED UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE, VERIFY THE EXACT LOCATION & IDENTIFY AREA OF CONFLICTS WITH EXISTING UTILITIES AND SHALL NOTIFY THE ENGINEER IF CONFLICT IS FOUND.



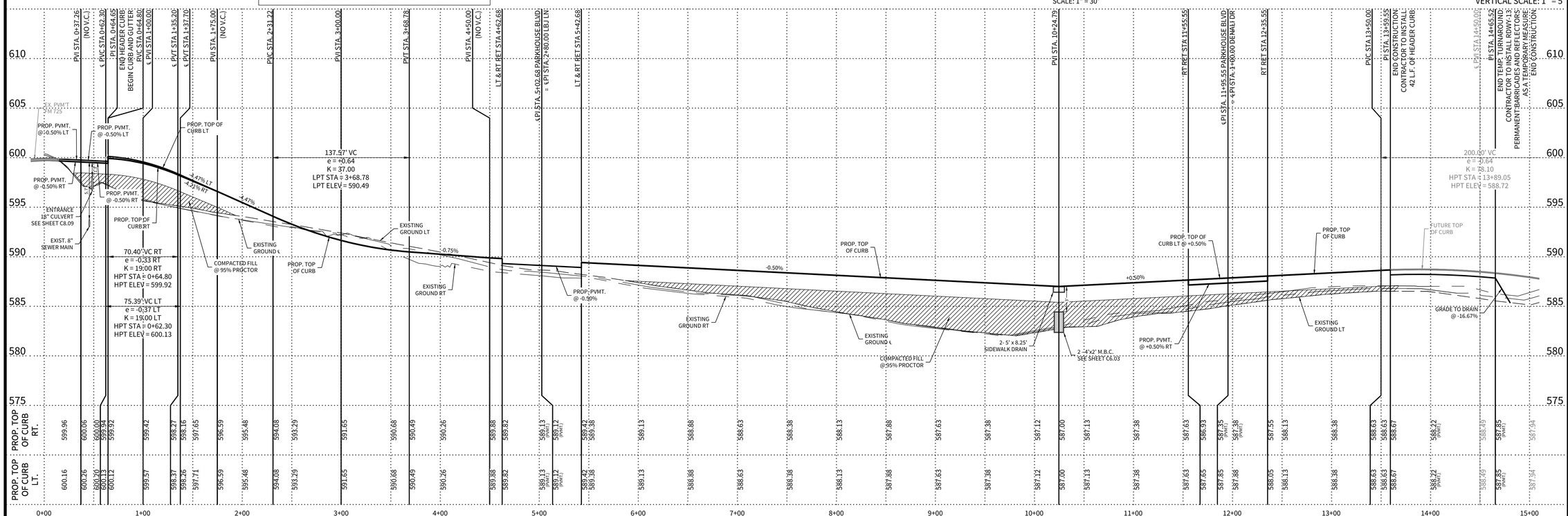
PARKHOUSE BLVD

STA. 0+00.00 TO STA. 13+59.55

INTERSECTION DETAIL

SCALE: 1" = 30'

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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PARK HOUSE UNIT 1

STREET PLAN & PROFILE - PARKHOUSE BLVD

DATE
08/29/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
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C7.00

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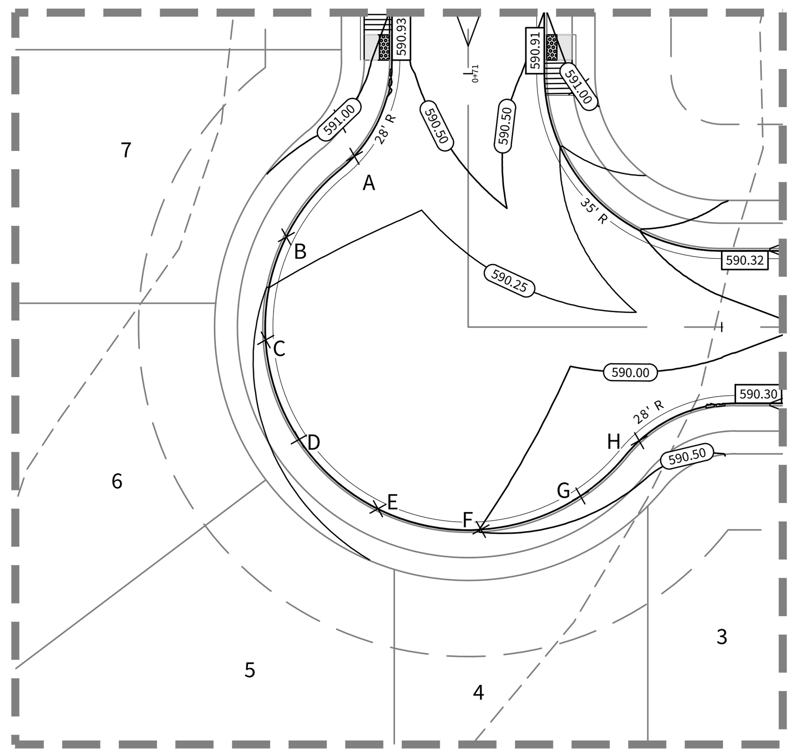
KEYNOTES:

1. END CURB & GUTTER/BEGIN SPILL CURB
2. END SPILL CURB & BEGIN CURB/GUTTER
3. CONTRACTOR TO INSTALL ADA RAMP WITH INFRASTRUCTURE
4. CONTRACTOR TO INSTALL SIDEWALK WITH INFRASTRUCTURE
5. END CATCH GUTTER / BEGIN SPILL GUTTER
6. END SPILL GUTTER / BEGIN CATCH GUTTER

ELEVATIONS:

XXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION
XXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION



KNUCKLE DETAIL

SCALE: 1" = 30'

Point	Elevation	Description
A	590.36'	GUTTER
B	590.33'	GUTTER
C	590.27'	GUTTER
D	590.18'	GUTTER
E	590.13'	GUTTER
F	590.03'	GUTTER
G	589.99'	GUTTER
H	589.87'	GUTTER

PROPOSED DRIVEWAY LOCATION

CONCRETE RIP-RAP

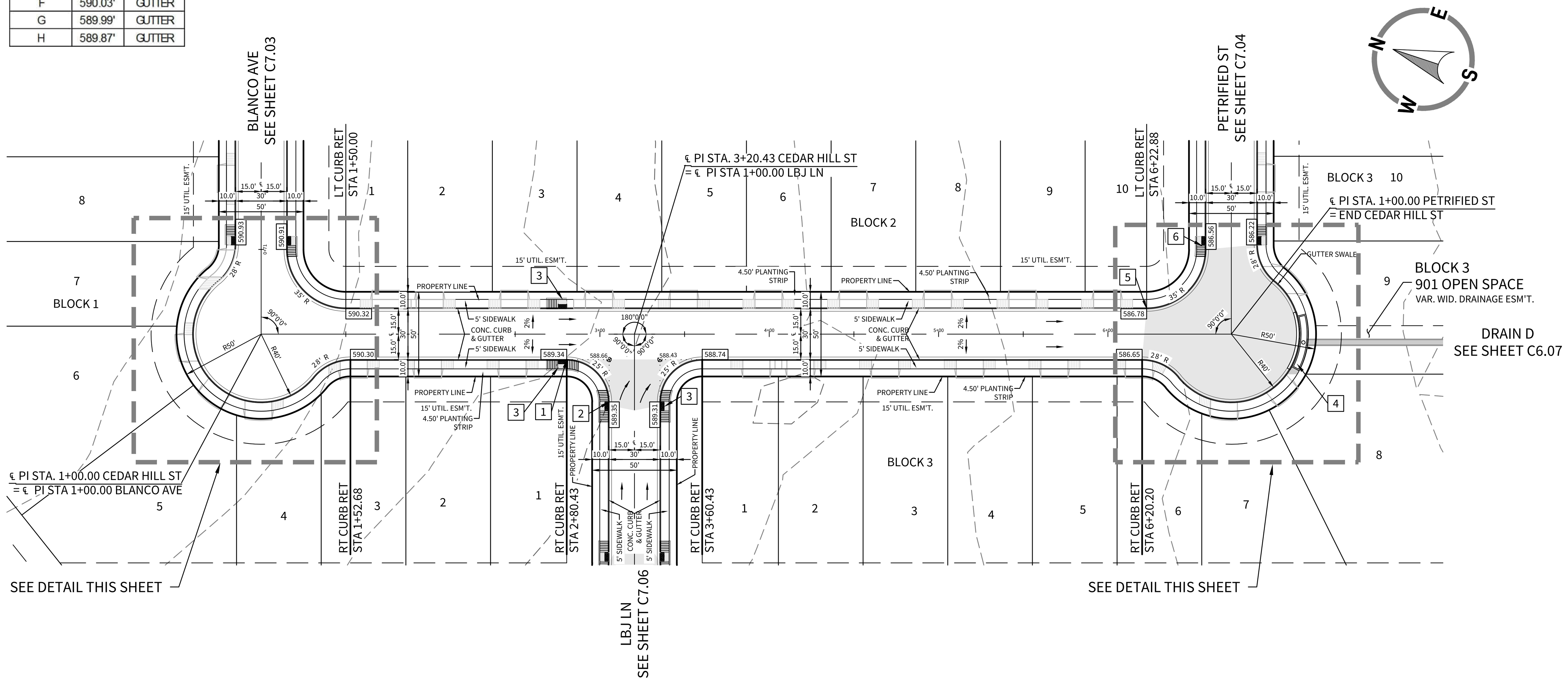
24" R.C.P. DRAIN

EARTHEN CHANNEL

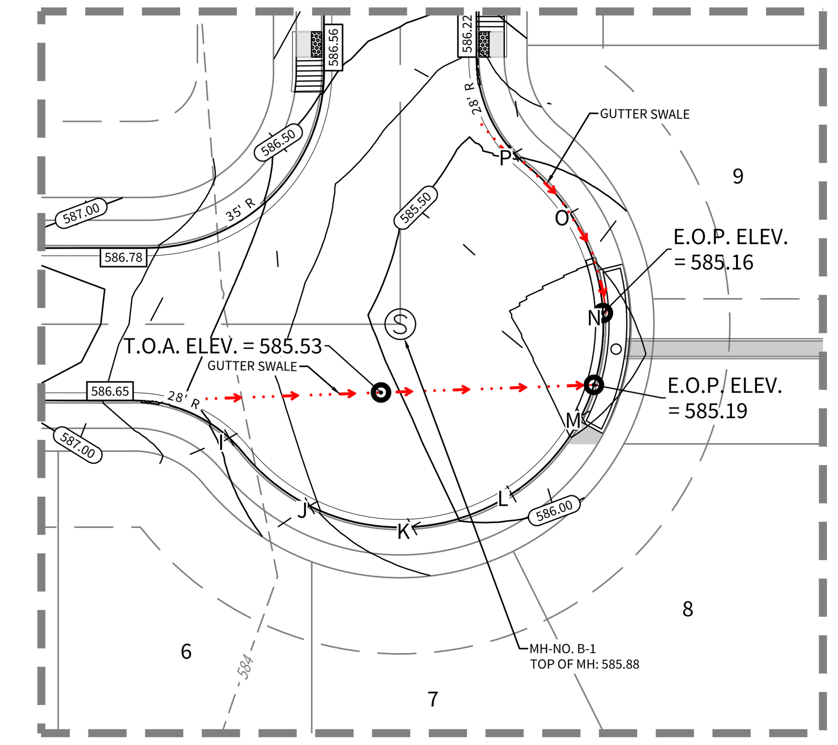
STREET WASHOUT

SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

PERMIT IS NEEDED TO WORK ON TxDOT R.O.W.
TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " " OR " " UNLESS OTHERWISE NOTED. (SHEET C7.D6)



Point	Elevation	Description
I	585.96'	GUTTER
J	585.81'	GUTTER
K	585.64'	GUTTER
L	585.41'	GUTTER
M	585.27'	GUTTER
N	585.16'	GUTTER
O	585.42'	GUTTER
P	585.52'	GUTTER



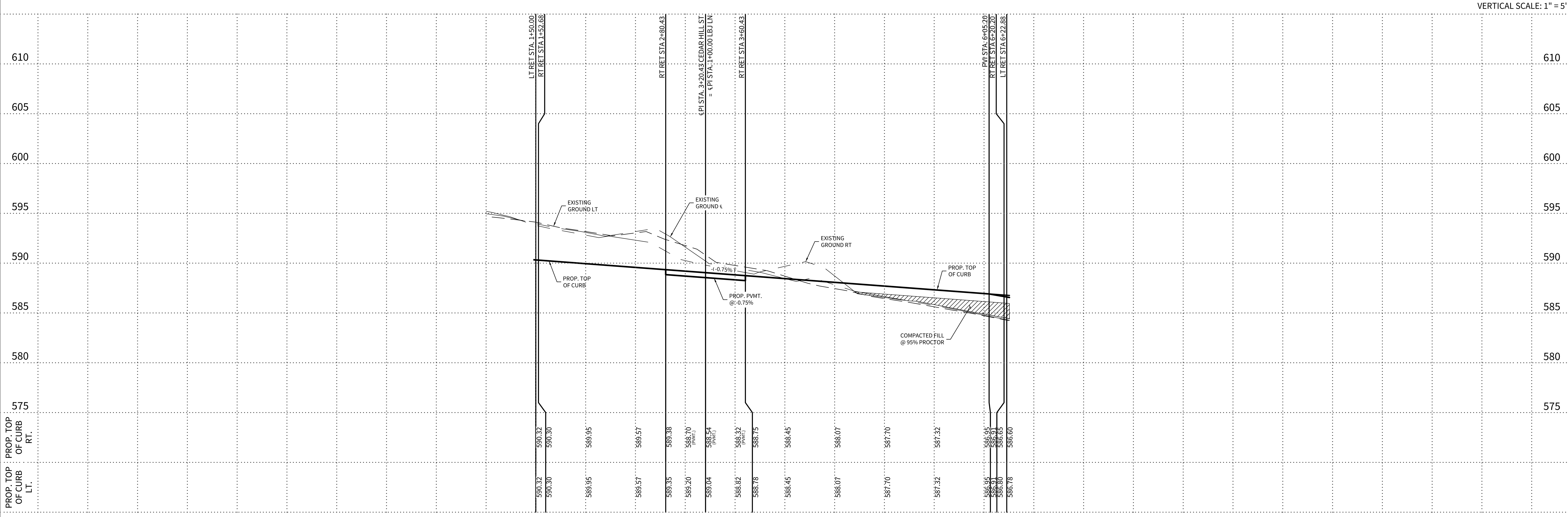
KNUCKLE DETAIL

SCALE: 1" = 30'

CEDAR HILL ST

STA. 1+00.00 TO 6+25.61

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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PARK HOUSE
UNIT 1

STREET PLAN & PROFILE - CEDAR HILL ST

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

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8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C7.01

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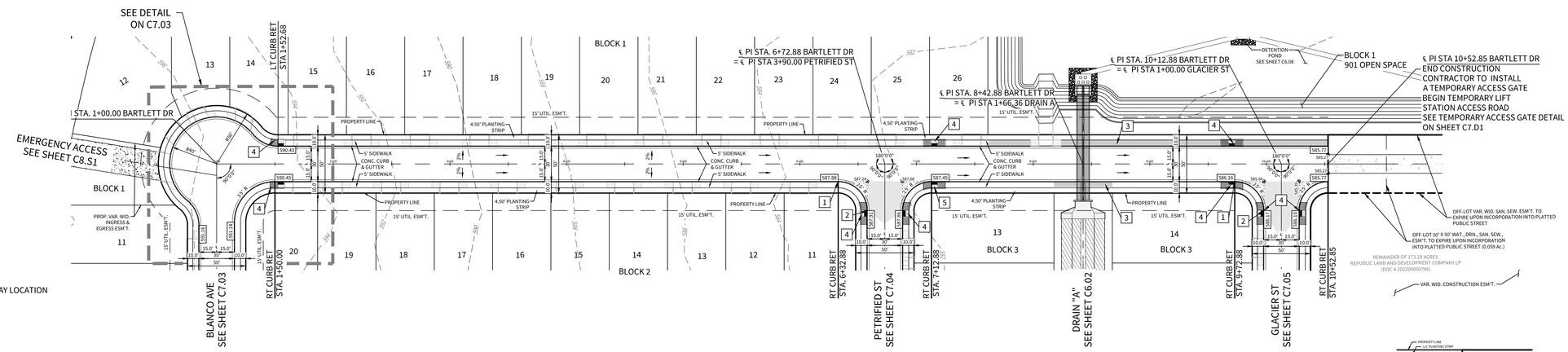
R:\04154\001\2-DWG\4-Plans\C7.01 STREET PLAN & PROFILE - CEDAR HILL ST.dwg 2025/08/07 9:29am sgonzales

KEYNOTES:

1. END CATCH GUTTER / BEGIN SPILL GUTTER
2. END SPILL GUTTER / BEGIN CATCH GUTTER
3. CONTRACTOR TO INSTALL SIDEWALK WITH INFRASTRUCURE
4. CONTRACTOR TO INSTALL ADA RAMP WITH INFRASTRUCURE

ELEVATIONS:

XXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION
XXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION



PROPOSED DRIVEWAY LOCATION

CONCRETE RIP-RAP

EARTHEN CHANNEL

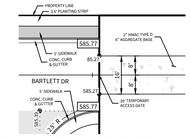
STREET WASHOUT

SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

PERMIT IS NEEDED TO WORK ON TxDOT R.O.W.
TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " ▦ "
OR " ▦ " UNLESS OTHERWISE NOTED. (SHEET C7.D6)

BARTLETT DR

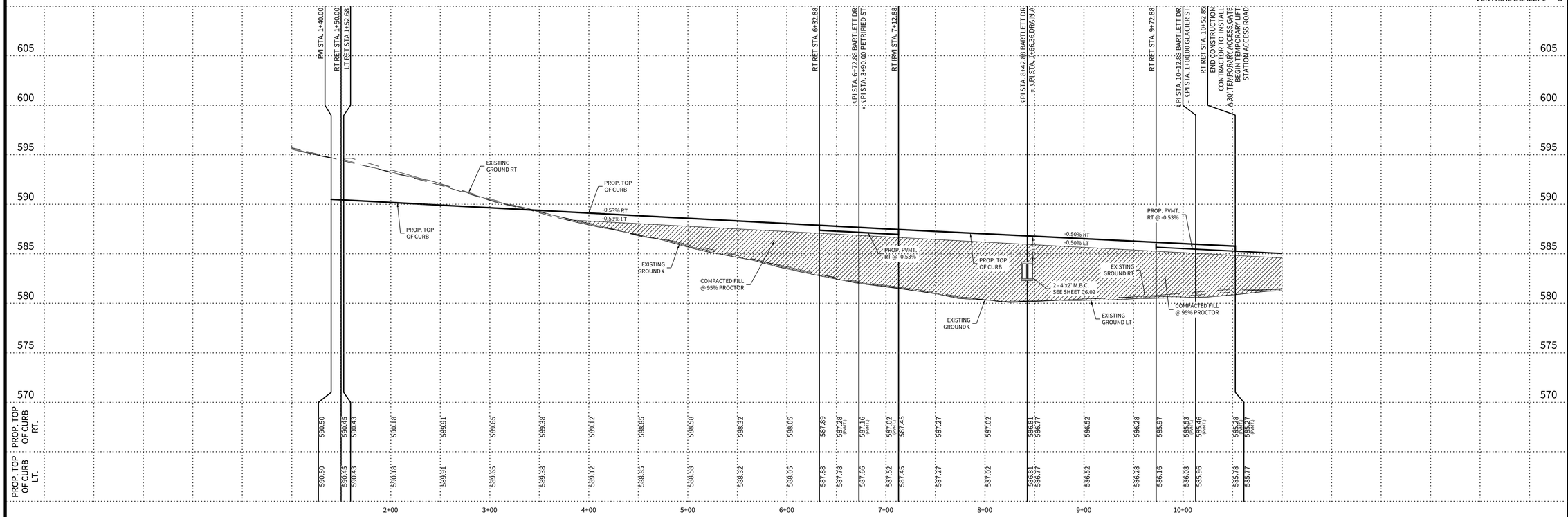
STA. 1+00.00 TO STA. 10+52.85



TEMPORARY ACCESS RD DETAIL

SCALE: 1" = 30'

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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PARK HOUSE UNIT 1

STREET PLAN & PROFILE - BARTLETT DR

DATE
08/28/2025

PROJECT NO.
04154-000

DRAWN BY
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CHECKED BY
JL/AC

REVISIONS
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STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C7.02

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KEYNOTES:

1 DRIVEWAY TO BE CONSTRUCTED WITH INFRASTRUCTURE

ELEVATIONS:

XXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

XXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

PROPOSED DRIVEWAY LOCATION

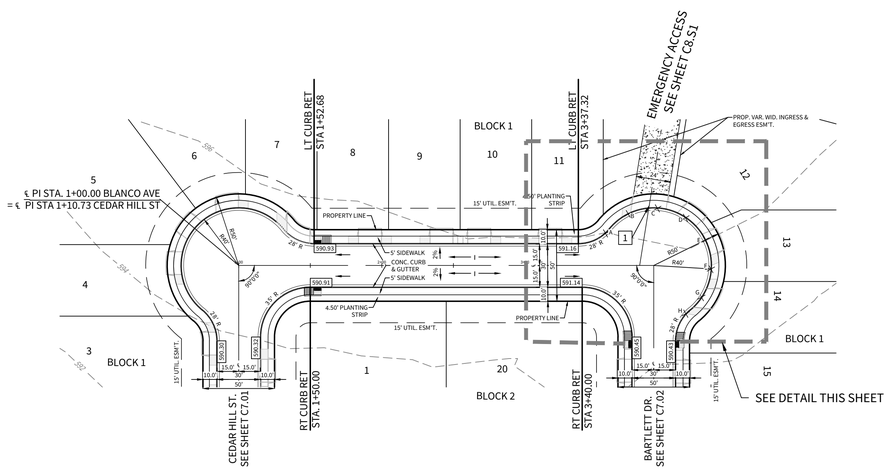
CONCRETE RIP-RAP

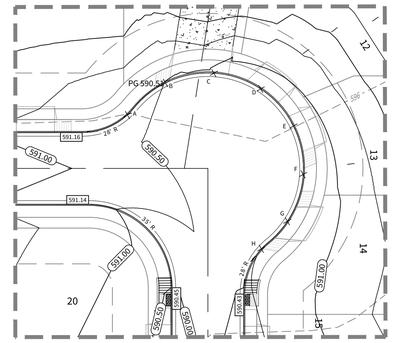
EARTHEN CHANNEL

STREET WASHOUT

SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

PERMIT IS NEEDED TO WORK ON TxDOT R.O.W.
TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " ▦ "
OR " ▦ " UNLESS OTHERWISE NOTED. (SHEET C7.D6)





KNUCKLE DETAIL

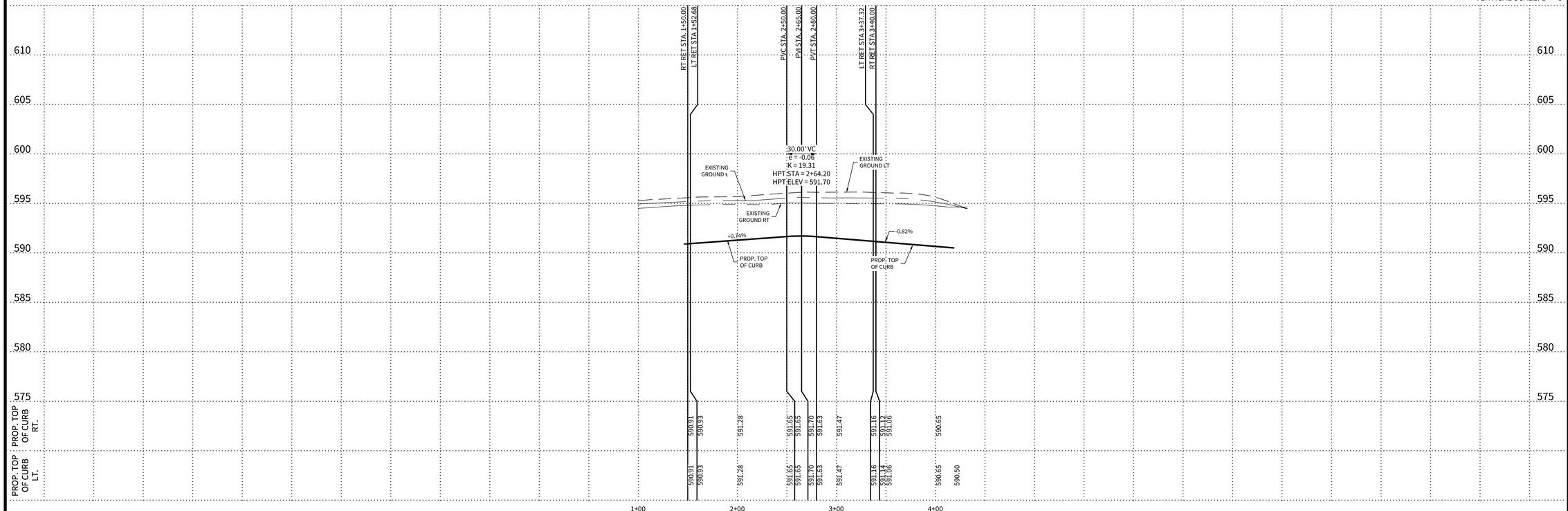
SCALE: 1" = 30'

Point	Elevation	Description
A	590.58'	GUTTER
B	590.51'	GUTTER
C	590.42'	GUTTER
D	590.34'	GUTTER
E	590.26'	GUTTER
F	590.18'	GUTTER
G	590.09'	GUTTER
H	590.02'	GUTTER

BLANCO AVE

STA. 1+00.00 TO 4+18.54

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE
UNIT 1

STREET PLAN & PROFILE - BLANCO AVE

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
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STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C7.03

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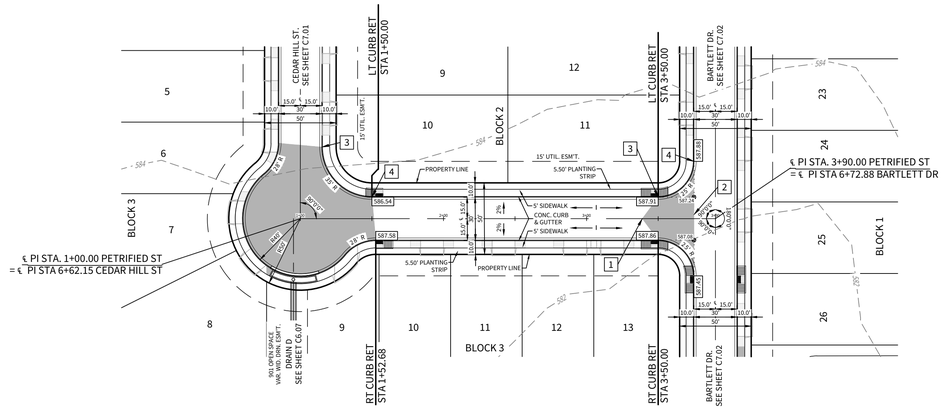
KEYNOTES:

1. BEGIN WASHOUT STA 03+38.93
2. END WASHOUT STA 03+75.00
3. END CATCH GUTTER / BEGIN SPILL GUTTER
4. END SPILL GUTTER / BEGIN CATCH GUTTER

ELEVATIONS:

XXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION
XXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION



PETRIFIED ST

STA. 1+00.00 TO STA. 3+90.00

PROPOSED DRIVEWAY LOCATION

CONCRETE RIP-RAP

24" R.C.P. DRAIN

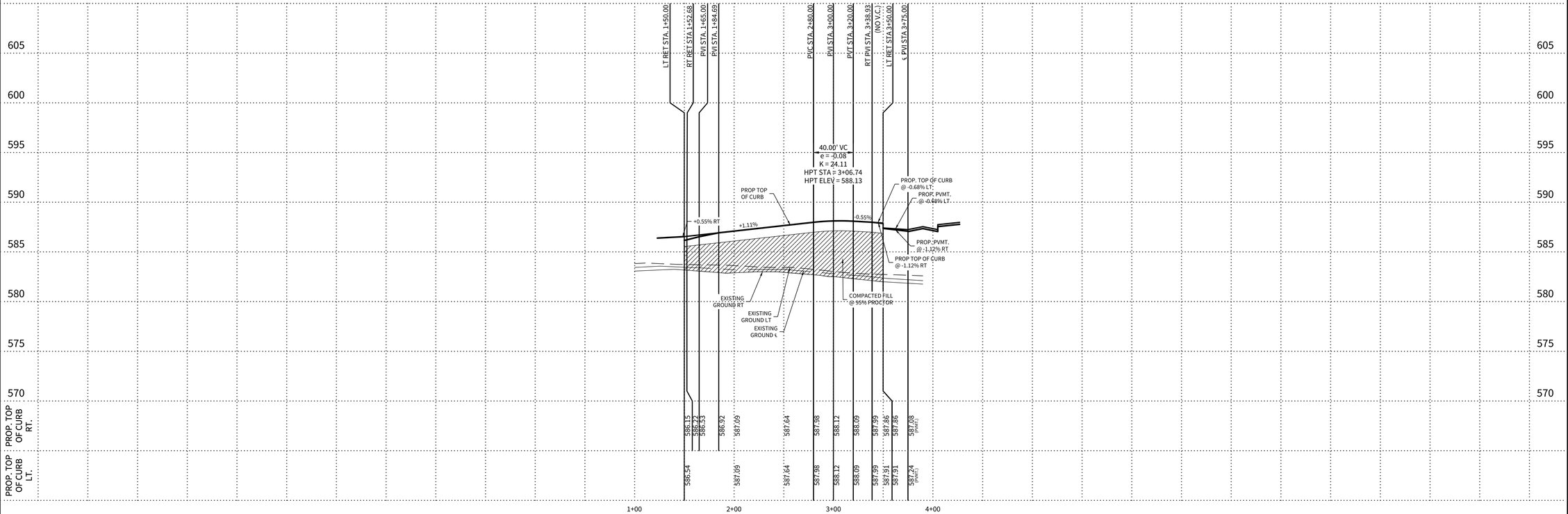
EARTHEN CHANNEL

STREET WASHOUT

SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

PERMIT IS NEEDED TO WORK ON TxDOT R.O.W.
TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " ▦ "
OR " ▦ " UNLESS OTHERWISE NOTED. (SHEET C7.D6)

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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CUDEENGINEERS.COM

1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE UNIT 1

STREET PLAN & PROFILE - PETRIFIED ST

REVISIONS 1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

C7.04

J:\04154\03\12 DWG\4 Files\C2 Civil\1 SHEET PLAN & PROFILE - PETRIFIED ST.dwg 2025/08/07 9:30am sgonzales

KEYNOTES:

1. BEGIN WASHOUT STA 1+15.00
2. END WASHOUT STA 1+65.00
3. END CATCH GUTTER / BEGIN SPILL GUTTER
4. END SPILL GUTTER / BEGIN CATCH GUTTER
5. CONTRACTOR TO INSTALL ADA RAMP WITH INFRASTRUCTURE
6. CONTRACTOR TO INSTALL SIDEWALK WITH INFRASTRUCTURE

ELEVATIONS:

XXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

XX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

PROPOSED DRIVEWAY LOCATION

CONCRETE RIP-RAP

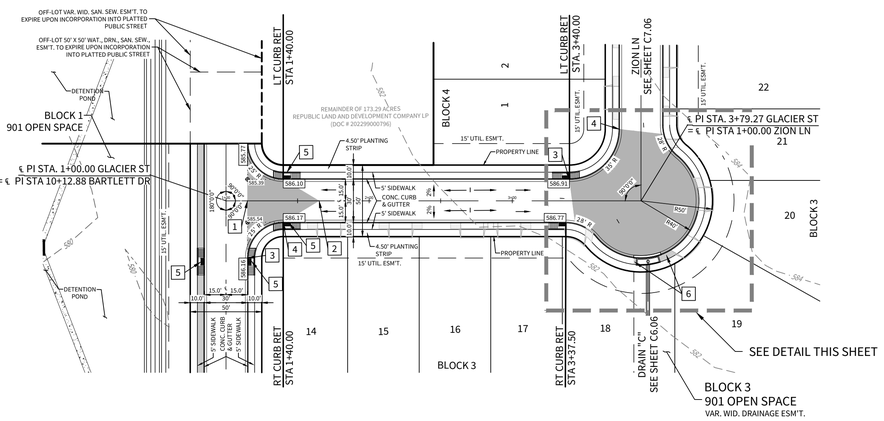
24" R.C.P. DRAIN

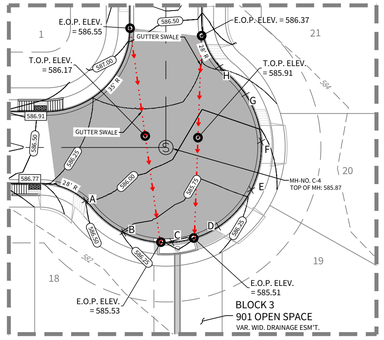
EARTHEN CHANNEL

STREET WASHOUT

SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

PERMIT IS NEEDED TO WORK ON TxDOT R.O.W.
TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " ▩▩ "
OR " ▩▩ " UNLESS OTHERWISE NOTED. (SHEET C7.D6)





KNUCKLE DETAIL

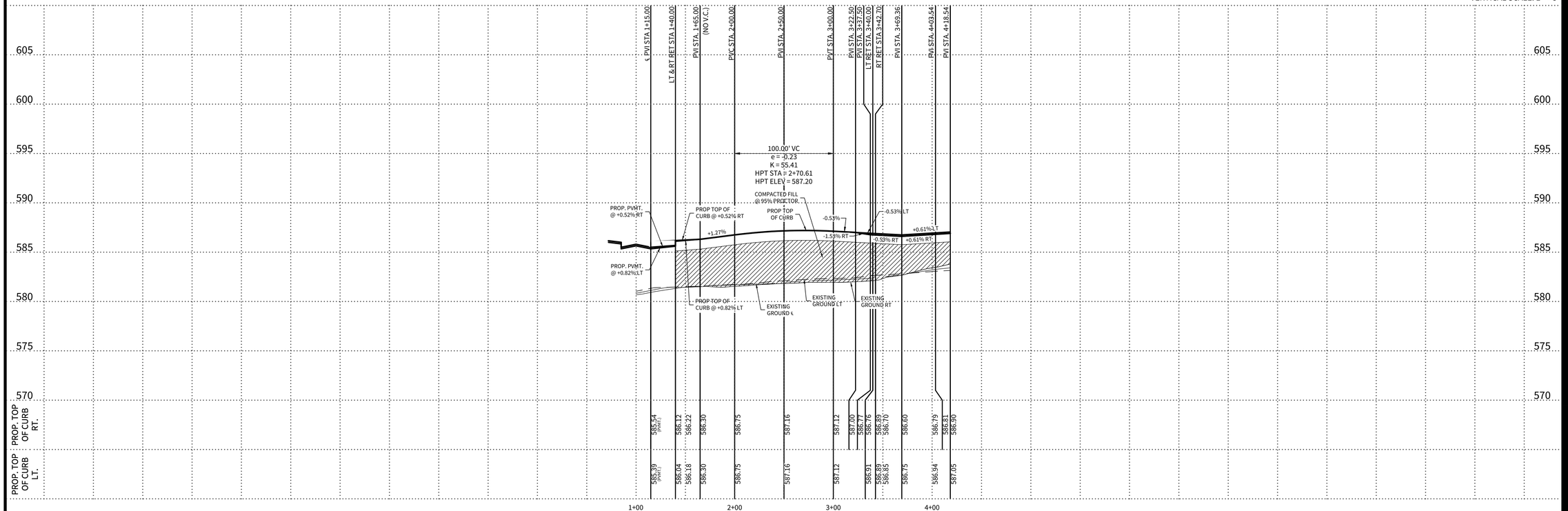
SCALE: 1" = 30'

Point	Elevation	Description
A	586.01'	GUTTER
B	585.79'	GUTTER
C	585.52'	GUTTER
D	585.63'	GUTTER
E	585.84'	GUTTER
F	585.96'	GUTTER
G	586.20'	GUTTER
H	586.27'	GUTTER

GLACIER ST

STA. 1+00.00 TO 4+18.54

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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PARK HOUSE UNIT 1

STREET PLAN & PROFILE - GLACIER AVE

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

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CUDE ENGINEERS
TBPELS No. 10048500

C7.05

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P:\04154\03\13 DWGS\4 Filtered C7.05 STREET PLAN & PROFILE - GLACIER AVE.dwg 2025/08/07 9:30am sgonzales

KEYNOTES:

1. BEGIN WASHOUT STA 1+15.00
2. END WASHOUT STA 1+45.00
3. BEGIN WASHOUT STA 2+14.50
4. END WASHOUT STA 2+59.00
5. END CATCH GUTTER / BEGIN SPILL GUTTER
6. END SPILL GUTTER / BEGIN CATCH GUTTER
7. CONTRACTOR TO INSTALL SIDEWALK WITH INFRASTRUCTURE
8. CONTRACTOR TO INSTALL ADA RAMP WITH INFRASTRUCTURE
9. BEGIN WASHOUT STA 3+01.00
10. END WASHOUT STA 3+27.00

ELEVATIONS:

XXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

XXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

24" R.C.P. DRAIN

PROPOSED DRIVEWAY LOCATION

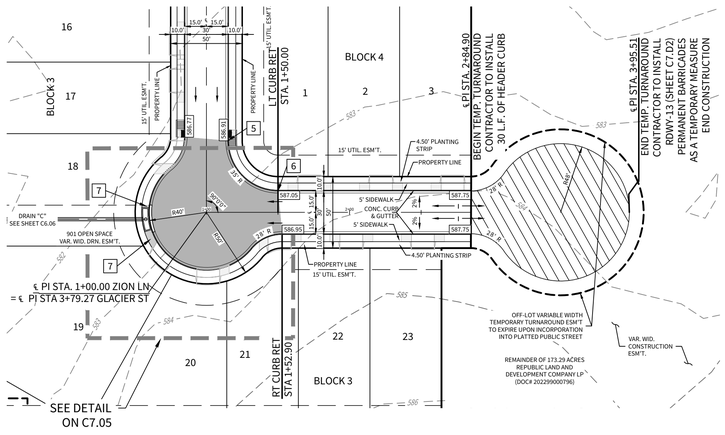
CONCRETE RIP-RAP

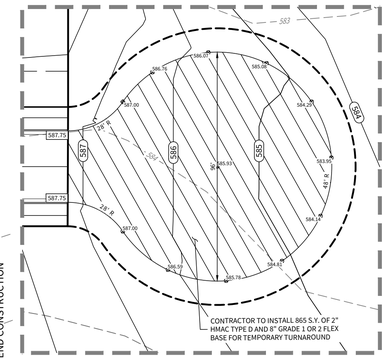
EARTHEN CHANNEL

STREET WASHOUT

SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

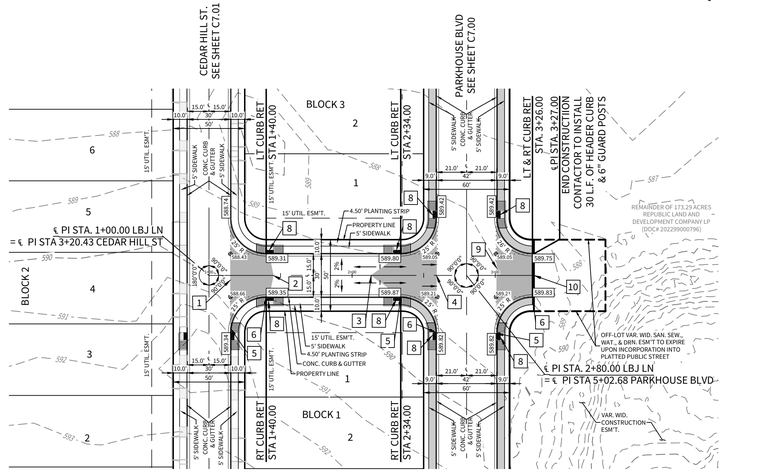
PERMIT IS NEEDED TO WORK ON TxDOT R.O.W.
TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " ▦ "
OR " ▦ " UNLESS OTHERWISE NOTED. (SHEET C7.D6)





TURNAROUND DETAIL

SCALE: 1" = 30'



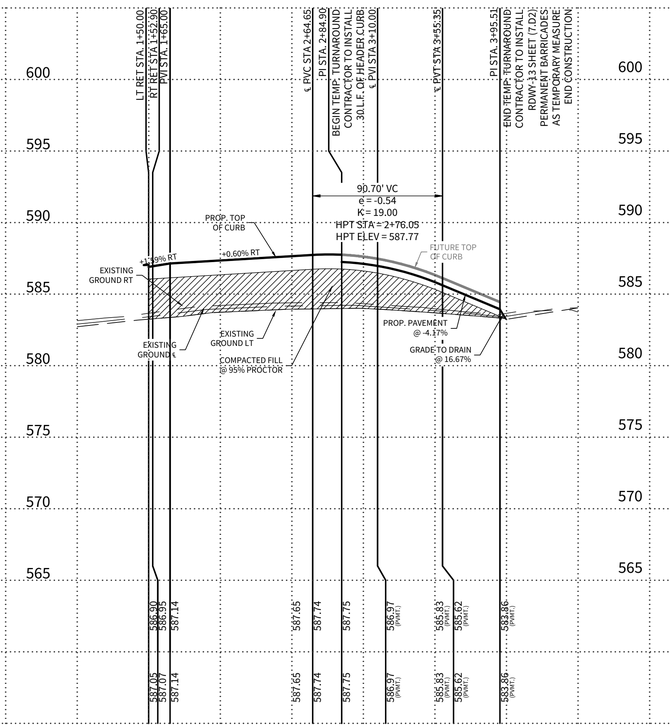
ZION LN

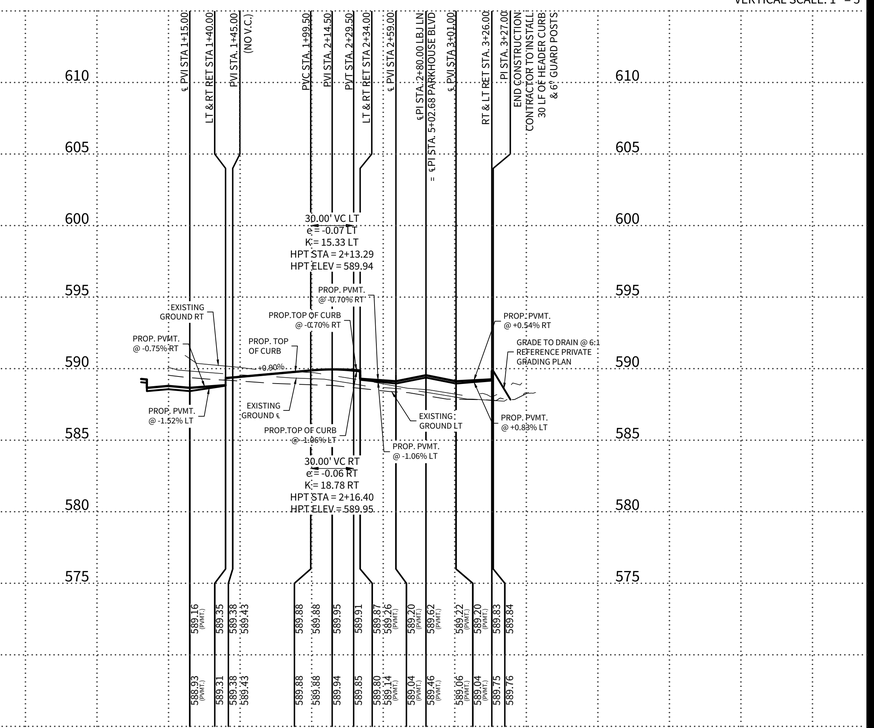
STA. 1+00.00 TO STA. 3+95.51

LBJ LN

STA. 1+00.00 TO STA. 3+27.00

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'





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PARK HOUSE
UNIT 1

STREET PLAN & PROFILE - ZION LN & LBJ LN

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
126773
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08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

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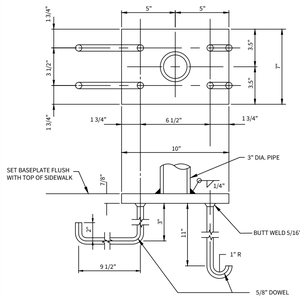
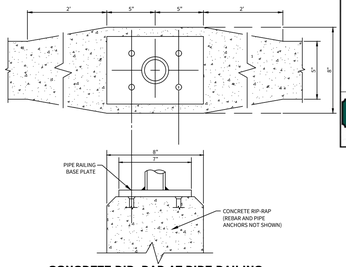


PIPE ANCHORAGE DETAILS

N.T.S.

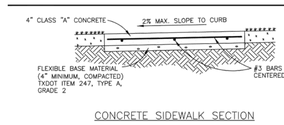


CONCRETE RIP-RAP AT PIPE RAILING BASE PLATE DETAIL

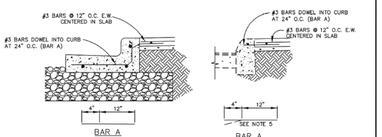
N.T.S.

NOTES:

1) CONTRACTOR TO FLARE CONCRETE RIP-RAP TO 8" AT PROPOSED PIPE RAILING BASE PLATE LOCATIONS.



CONCRETE SIDEWALK SECTION



CONCRETE SIDEWALK ABUTTING PROPOSED CURB SECTION

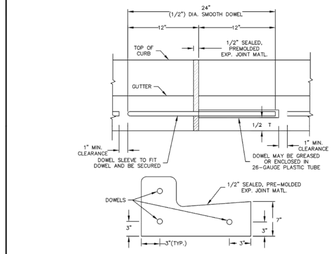
CONCRETE SIDEWALK ABUTTING EXISTING CURB SECTION

NOTE:

1. SIDEWALK SHALL NOT BE LOWER THAN TOP OF CURB.
2. SIDEWALK WIDTH SHALL CONFORM TO THE ROAD ADEQUACY AND ACCESS TECHNICAL GUIDANCE.
3. CONTROL (SCORED) JOINTS SHALL BE INSTALLED AT A DISTANCE EQUAL TO THE WIDTH OF THE SIDEWALK, A MINIMUM OF 48 INCHES APART.
4. EXPANSION JOINTS ARE REQUIRED EVERY 40 LINEAR FEET OF SIDEWALK AND AT AREAS WHERE STRUCTURES, POSTS, ETC. PENETRATE THE SIDEWALK AND DIFFERENTIAL SETTLEMENT CAN BE ANTICIPATED.
5. BAR A MAY BE BENT TO PROVIDE MORE CONTACT WITH EXISTING CURB AND REDUCE BREAKING OF EXISTING CURB DURING INSTALLATION. MAINTAIN 4 INCH IMBED.

SEGUIN TEXAS It's real.

DATE ISSUED:	JUNE 1, 2013		TITLE
REVISION	DATE	BY	CONCRETE SIDEWALK SECTION
1ST REVISION	11/1/18	MS	
2ND REVISION	3/22/24	JS	
			SCALE: N.T.S.
			DRAWING No. SW-1



CURB AND GUTTER

NOTES:

1. CONSTRUCT EXPANSION JOINTS AT A MAXIMUM OF 40'-0" ALONG THE LENGTH OF CURB.
2. PLACEMENT OF DOWEL WILL MATCH REBAR PLACEMENT WITH CITY STANDARD CURB AND GUTTER DETAILS OR AS NEEDED TO MAINTAIN 2" MINIMUM COVER.
3. CONSTRUCTION-CONTROL JOINT EVERY 10 FEET.

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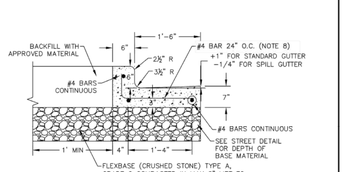
DATE ISSUED:	MAY 1, 2018		TITLE
REVISION	DATE	BY	CURB EXPANSION JOINT DETAIL
1ST REVISION	11/01/18	MS	
2ND REVISION	10/04/24	JS	
			SCALE: N.T.S.
			DRAWING No. CRB-2



STANDARD CURB AND GUTTER

NOTES:

1. FOR CONCRETE CURB AND GUTTER REMOVEL/REPLACEMENT, INSTALLED SECTION SHALL MATCH EXISTING CURB RADII.
2. CURB AND GUTTER SHALL BE 3000 PSI CONCRETE IN ACCORDANCE WITH TxDOT ITEMS 361, 421, & 529 (MIN.)
3. CONTRACTOR MAY INSTALL TYPE B HMAC BELOW CURB AND GUTTER IN PLACE OF FLEX BASE; NO ADDITIVE COST.
4. EXPANSION JOINT EVERY 40'. SEE CURB EXPANSION JOINT DETAIL.
5. REFER TO PLANS FOR LOCATION FOR PROPOSED SIDEWALKS. REFER TO SW SERIES DETAILS FOR SIDEWALK CONSTRUCTION DETAILS.
6. SPILL GUTTER TO BE USED UPGRADE OF VALLEY GUTTER AS APPROPRIATE TO ENSURE POSITIVE DRAINAGE.
7. STEEL SHALL HAVE A MINIMUM 2" COVER.
8. #4 BAR 24" O.C. MAY BE OMITTED WHEN USING MACHINE PLACED METHOD WITH APPROVAL OF THE CONSTRUCTION INSPECTOR.

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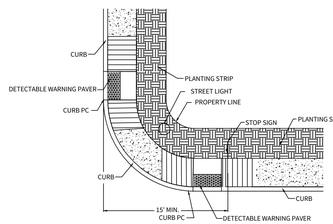
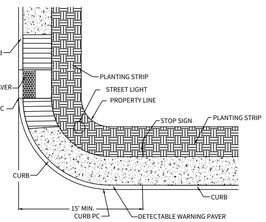
DATE ISSUED:	JUNE 1, 2013		TITLE
REVISION	DATE	BY	STANDARD CURB AND GUTTER DETAIL
1ST REVISION	11/01/18	MS	
2ND REVISION	10/04/24	JS	
			SCALE: N.T.S.
			DRAWING No. CRB-3



ADA RAMP INTERSECTION LAYOUT DETAIL
(TYPE 2 DIRECTIONAL RAMPS)

NOTES:

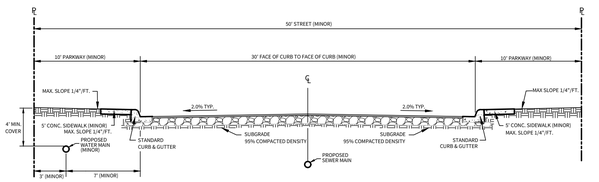
1) STREET LIGHTS SHALL BE INSTALLED 5' FROM FACE OF CURB AND A MINIMUM DISTANCE OF 6" FROM THE PROPOSED SIDEWALK.
2) FIRE HYDRANTS (AS APPLICABLE) SHALL BE INSTALLED WITHIN THE R.O.W. A MINIMUM OF 5' FROM THE BACK OF THE CURB AND A MINIMUM OF 1' AWAY FROM THE PROPOSED SIDEWALK.



ADA RAMP INTERSECTION LAYOUT DETAIL
(TYPE 2 DIRECTIONAL RAMPS - SINGLE DIRECTION)

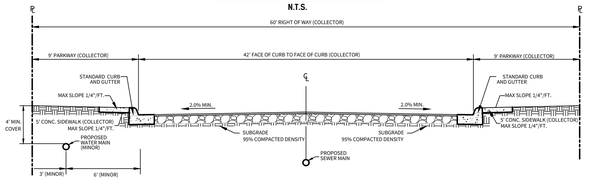
NOTES:

1) STREET LIGHTS SHALL BE INSTALLED 5' FROM FACE OF CURB AND A MINIMUM DISTANCE OF 6" FROM THE PROPOSED SIDEWALK.
2) FIRE HYDRANTS (AS APPLICABLE) SHALL BE INSTALLED WITHIN THE R.O.W. A MINIMUM OF 5' FROM THE BACK OF THE CURB AND A MINIMUM OF 1' AWAY FROM THE PROPOSED SIDEWALK.



MINOR STREET CROSS SECTION

N.T.S.



COLLECTOR STREET CROSS SECTION

N.T.S.

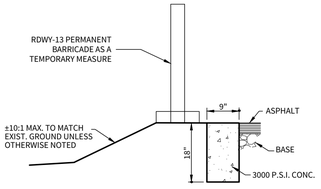
STREET PAVEMENT DESIGN OPTIONS (FROST GEOSCIENCES NO. FGS-G23113) (DATED MAY 12,2023)

STREET TYPE	HMAC TYPE "D"	HMAC TYPE "C"	HMAC TYPE "B"	AGGREGATE BASE (TYPE A GRADE 2)	LIME STABILIZED SUBGRADE	BASE UNDER CURB	STRUCTURAL NUMBER	TENSAR GEOGRID (TX-7)
TYPE "A"	2"	-	-	8"	6"	-	-	YES
COLLECTOR	3"	-	-	15.75"	6"	-	-	YES
TEMP. EMERG ACCESS	2"	-	-	8"	6"	-	-	NO
ACCESS TO LIFT STA.	2"	-	-	8"	6"	-	-	NO
FM 725 WIDENING	-	2"	3.5"	12.00"	6"	-	-	NO

PLEASE REFER TO GEOTECHNICAL REPORT CONDUCTED BY FROST GEOSCIENCES ENGINEERING AND CONSTRUCTION MATERIALS TESTING (REPORT # FGS-G23113 DATED: MAY 2023)

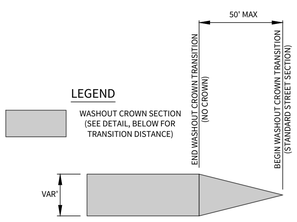
1. IF THE SUBGRADE PLASTICITY INDEX VALUE IS GREATER THAN 20, LIME TREATMENT IS REQUIRED.
2. THE OPTIMUM LIME CONTENT SHOULD RESULT IN A SOIL-LIME MIXTURE WITH A PH OF AT LEAST 12.4 WHEN TESTED IN ACCORDANCE WITH ASTM C 977 AND SHOULD REDUCE THE PLASTICITY INDEX TO 20 OR LESS.
3. A 6 % OF LIME IS REQUIRED TO REDUCE THE PLASTICITY VALUE, THIS TRANSLATES INTO APPROXIMATELY 29.2 LBS. OF LIME PER SQUARE YARD OF SUBGRADE.
4. SUBGRADE SOILS SHOULD BE TESTED FOR SOLUBLE SULFATE CONTENT PRIOR TO LIME TREATMENT.
5. PAVEMENT SECTION REQUIRED IS TO BE DETERMINED BY GEOTECHNICAL ENGINEER ON-SITE.
6. PAVEMENT MATERIALS
   RECOMMENDATIONS REGARDING MATERIAL REQUIREMENTS FOR THE VARIOUS PAVEMENT SECTIONS ARE SUMMARIZED BELOW:

- FILL MATERIAL - IF FILL IS USED TO RAISE THE GRADE, APPROVED FILL MATERIAL UNDERNEATH THE PAVEMENT SHOULD BE USED. THE FILL SHOULD BE FREE OF DELETERIOUS MATERIAL WITH A MINIMUM CBR VALUE OF 3.0 AND PREFERABLY A PLASTIC INDEX BELOW 19. IF THE MATERIAL HAS A PI GREATER THAN 20 THE LIME APPLICATION RATES SHOULD BE RE-EVALUATED AND SULFATE CONTENT TESTED FOR THE FILL MATERIAL. THE MATERIAL SHOULD BE PLACED AS PER APPLICABLE CITY OR COUNTY GUIDELINES.
- HOT-MIX ASPHALTIC SURFACE COURSE - ASPHALTIC CONCRETE SHOULD BE PLANT MIXED, HOT LAID, TYPE D MEETING THE 2014 TX DOT STANDARD SPECIFICATION ITEM 340. MIX SHOULD BE COMPACTED TO BETWEEN 92 AND 97 PERCENT OF THE MAXIMUM THEORETICAL DENSITY AS DETERMINED BY TEX-227-F.
- ASPHALT TREATED BASE - ASPHALT TREATED BASE SHOULD BE PLACED IN MAXIMUM SIX (6) INCH COMPACTED LIFTS. THESE MATERIALS SHOULD CONFORM TO THE REQUIREMENTS OF THE 2014 TXDOT STANDARD SPECIFICATION ITEM 292, GRADE 1 OR ITEM 340, TYPE A OR B.
- FLEXIBLE BASE COURSE - FLEXIBLE BASE MATERIALS SHOULD BE PLACED IN MAXIMUM EIGHT (8) INCH COMPACTED LIFTS. THE BASE MATERIALS SHOULD BE COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 1557. FLEXIBLE BASE MATERIALS SHOULD BE MOISTURE CONDITIONED TO BETWEEN PLUS OR MINUS TWO (+-2) PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT. FLEXIBLE BASE MATERIALS SHOULD MEET ALL REQUIREMENTS SPECIFIED IN 2014 TX DOT STANDARD SPECIFICATION ITEM 247, TYPE A OR B, GRADE 1 OR 2.
- LIME TREATED SUBGRADE - CLAY SUBGRADE (WITH P.I. VALUES GREATER THAN 20) SHOULD BE TREATED WITH HYDRATED LIME TO REDUCE ITS PLASTICITY AND IMPROVE ITS STRENGTH AND LOAD CARRYING ABILITY. HYDRATED LIME SHOULD BE MIXED WITH THE SUBGRADE SOILS IN ACCORDANCE WITH BEXAR COUNTY SPECIFICATIONS FOR LIME TREATMENT TO REDUCE THE P.I. VALUE TO 20 OR LESS.
- GEOGRID - TENSAR TX7 GEOGRID MAY BE USED TO PROVIDE ADDITIONAL STRUCTURAL SUPPORT TO FLEXIBLE BASE MATERIALS. THE GEOGRID SHOULD BE PLACED AS PER MANUFACTURER'S RECOMMENDATIONS AT THE INTERFACE BETWEEN THE FLEXIBLE BASE AND SUBGRADE.
- MOISTURE CONDITIONED SUBGRADE - EXPOSED SUBGRADE SOILS THAT DO NOT NEED TO BE STABILIZED OR TREATED SHOULD BE SCARIFIED AND MOISTURE CONDITIONED TO BETWEEN PLUS OR MINUS THREE (+-3) PERCENTAGE POINTS OF OPTIMUM TO A DEPTH OF AT LEAST SIX (6) INCHES. THE SOILS SHOULD THEN BE COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698.



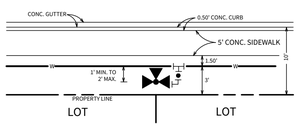
HEADER CURB DETAIL

N.T.S.



WASHOUT CROWN TRANSITION DETAIL

N.T.S.

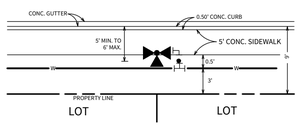


NOTE:

1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

TYPICAL FIRE HYDRANT DETAIL (5' SIDEWALK / 50' ROW)

N.T.S.

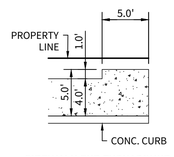


NOTE:

1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

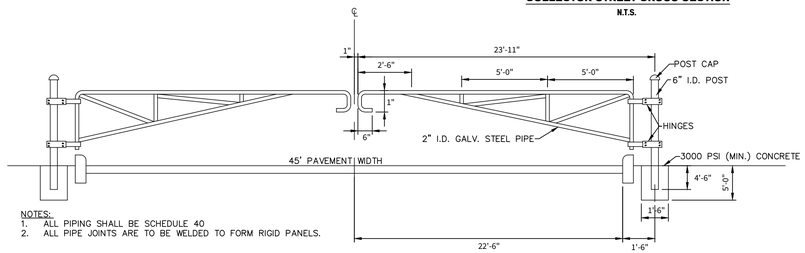
TYPICAL FIRE HYDRANT DETAIL (5' SIDEWALK / 60' ROW)

N.T.S.



SIDEWALK END TURNAROUND

N.T.S.

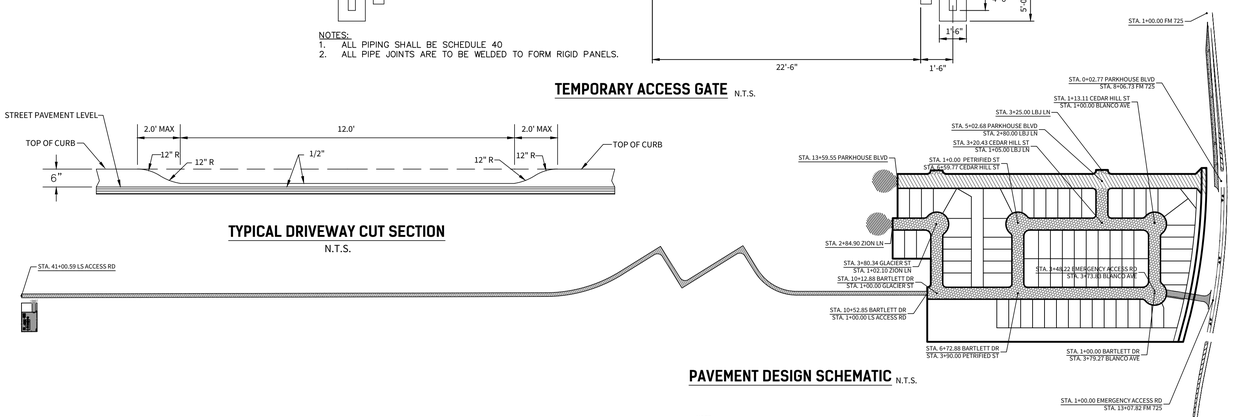


NOTES:
1. ALL PIPING SHALL BE SCHEDULE 40
2. ALL PIPE JOINTS ARE TO BE WELDED TO FORM RIGID PANELS.

TEMPORARY ACCESS GATE N.T.S.

TYPICAL DRIVEWAY CUT SECTION

N.T.S.

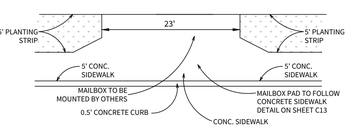


PAVEMENT DESIGN SCHEMATIC N.T.S.

NOTE:
1. REFERENCE GEOTECHNICAL REPORT (FGS-G23113) FOR BORING INFORMATION AND CBR LOCATIONS.

LEGEND:

MINOR STREET		
BLANCO AVE.	STA. 1+00.00 - 4+12.83	
BARTLETT DR	STA. 1+00.00 - 10+52.85	
CEDAR HILL ST	STA. 1+00.00 - 6+59.77	
GLACIER ST	STA. 1+00.00 - 3+80.34	
LBJ LN	STA. 1+00.00 - 2+80.00	
PETRIFIED ST	STA. 1+00.00 - 3+90.00	
ZION LN	STA. 1+00.00 - 2+84.90	
COLLECTOR STREET		
PARKHOUSE BLVD.	STA. 1+00.00 - 13+59.55	
TEMP. EMERGENCY ACCESS	STA. 1+00.00 - 3+54.15	
LIFT STATION ACCESS DRIVE	STA. 1+00.00 - 41+00.59	
FM 725 TURN LANE	STA. 1+00.00 - 21+46.41	



MAILBOX PAD DETAIL

N.T.S.

NOTE:
MAILBOX PAD WITHIN ROW SHALL BE ADA COMPLIANT AND MEET USPS REQUIREMENTS

THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES, INCLUDING SERVICE LATERALS AND DRAINAGE STRUCTURES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND DEPTHS OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT, AND TO PROTECT THE SAME DURING CONSTRUCTION.

CITY OF SEGUIN PUBLIC WORKS	1-830-401-2416
TEXAS STATE WIDE ONE CALL LOCATOR	1-800-545-6005
G.V.E.C. INC.	→
SPRING HILLS WATER SUPPLY	1-830-379-7683

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PARK HOUSE UNIT 1

STANDARD STREET DETAIL

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPE/LS No. 10048500

C7.D1

R:\04154\DELO 2\MOC4 Files\C7.D1 STANDARD STREET DETAIL.dwg, 8/25/2025 7:53:36 AM, sgonzales

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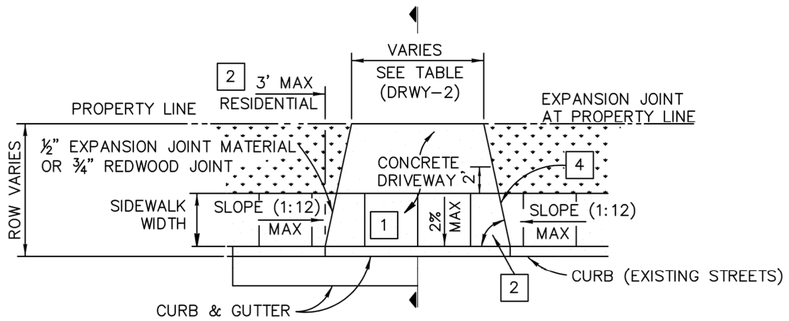
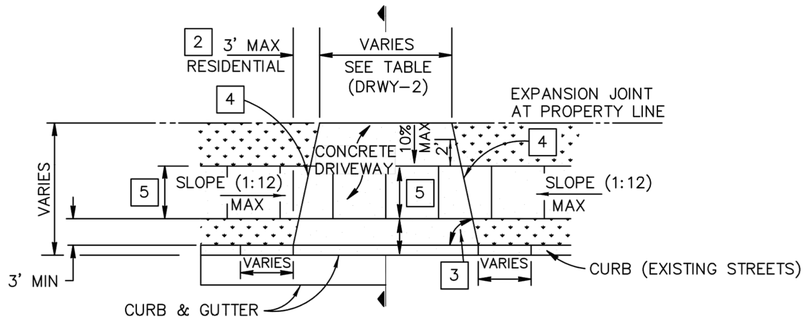


DRIVEWAY LAYOUT PLAN VIEW

WITH SIDEWALK ABUTTING CURB

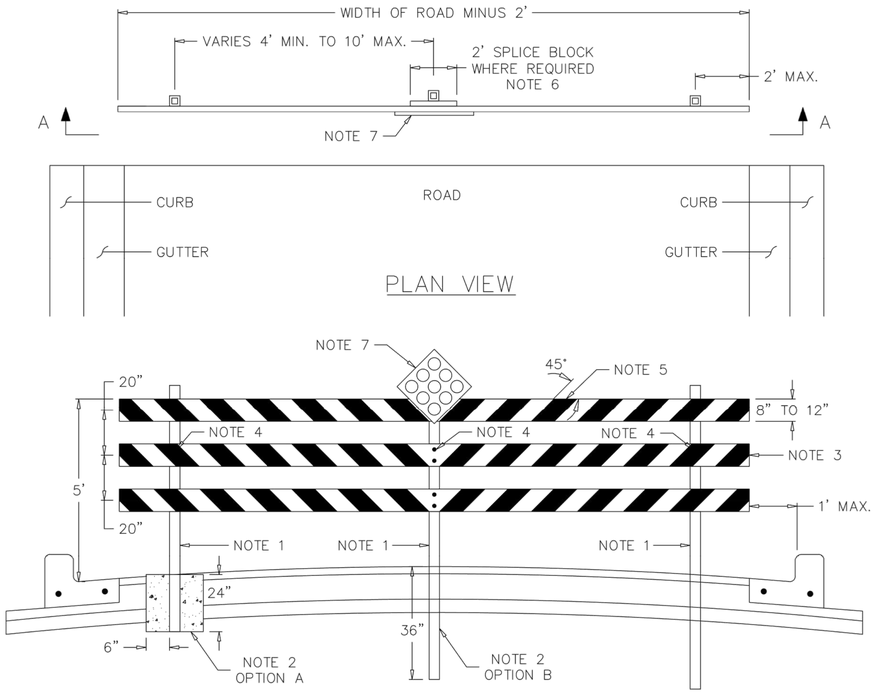


DRIVEWAY LAYOUT PLAN VIEW

WITH SIDEWALK SEPARATED FROM CURB

1. THE INITIAL 5 FEET OF DRIVEWAY APRON ADJACENT TO THE CURB IS DESIGNATED AS THE PEDESTRIAN ACCESS ROUTE. THE CROSS-SLOPE SHALL NOT EXCEED 1:48 (2%)
2. 45° FOR COMMERCIAL DRIVEWAY (OR 30 FOOT RADII)
   3' MAX. OFFSET FOR RESIDENTIAL DRIVEWAYS
3. 8% MAX TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.
4. ½" EXPANSION JOINT MATERIAL OR ¾" REDWOOD JOINT
5. THE PEDESTRIAN ACCESS ROUTE THRU THE DRIVEWAY APRON SHALL MEET TAS/ADA. THE CROSS-SLOPE SHALL NOT EXCEED 1:48 (2%)

SEGUIN TEXAS It's real.	DATE ISSUED: JUNE 1, 2013			TITLE: DRIVEWAY DETAILS
	REVISION	DATE	BY	
	1ST REVISION	11/01/18	MS	
	2ND REVISION	4/11/24	JS	
				SCALE: N.T.S.
				DRAWING No.: DRWY-1



SECTION A-A

NOTE:

SUPPORT POST

1. 1 1/2" PERFORATED SQUARE STEEL TUBE SET INTO 1 3/4" STEEL TUBE SLEEVE.
2. POST SHALL BE SET WITH OPTION A (24" DEEP WITH 12" DIA. CONCRETE) OR OPTION B (36" DEEP AIR DRIVEN INTO UNDISTURBED SOIL) AT CONTRACTORS OPTION.

RAILING

3. WIDTH OF RAIL SHALL BE 1" HOLLOW-PROFILE PLASTIC LUMBER WITH INTERNAL STIFFENERS
4. RAILS SHALL BE FASTENED TO EACH TUBE WITH 2" STEEL BOLTS WITH NUTS AND WASHERS ON EACH SIDE.
5. THE RAILS SHALL HAVE 6" WIDE REFLECTORIZED RED STRIPES OF TAPE PLACED ON 45 DEGREE SLOPES, DOWN AND TOWARD THE CENTER OF THE BARRICADE.
6. BARRICADES MAY BE CONSTRUCTED IN SECTIONS OR MAY BE CONTINUOUS ACROSS ROADWAY WIDTH. SPLICES ON CONTINUOUS RAIL BARRICADES SHALL BE AT POSTS AND SHALL HAVE A 2' SPLICE BLOCK ON BACK SIDE OF THE SAME MATERIAL AS RAIL.

SIGN

7. 18" DIAMOND REFLECTORIZED RED PANEL OR 18" DIAMOND RED OR BLACK PANEL WITH NINE-3" DIAMETER RED REFLECTORS SYMMETRICALLY PLACED AT CENTER POSTS, A MINIMUM OF 4' ABOVE GROUND SHALL BE USED FOR END OF ROAD MARKERS AS PER TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) SECTION 3C.04.

SEGUIN TEXAS	DATE ISSUED: MARCH 11, 2019			TITLE: PERMANENT BARRICADE DETAIL
	REVISION	DATE	BY	
				SCALE: N.T.S.
				DRAWING No.: RDWY-13

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San Marcos, Texas 78666
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PARK HOUSE UNIT 1

TYPICAL CONCRETE DRIVEWAY DETAILS

DATE 08/07/2025

PROJECT NO. 04154-000

DRAWN BY SG/JVA

CHECKED BY JL/AC

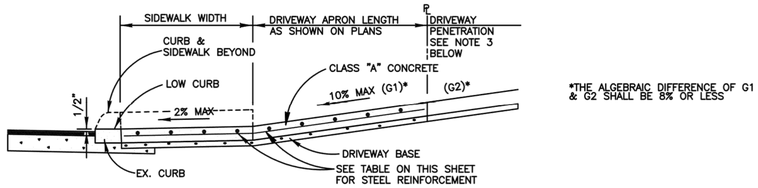
REVISIONS 1 2 3 4 5 6 7 8

CUDE ENGINEERS
TBPELS No. 10048500

C7.D2

P:\04154\00\13 DWG\A-Plans\C7.D2 TYPICAL CONCRETE DRIVEWAY DETAILS.dwg 2025/08/07 5:30am sgonzales

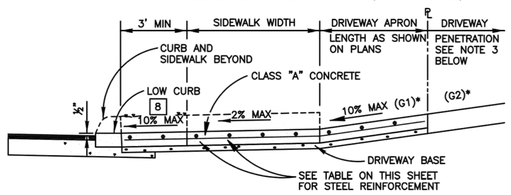
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



*THE ALGEBRAIC DIFFERENCE OF G1 & G2 SHALL BE 8% OR LESS

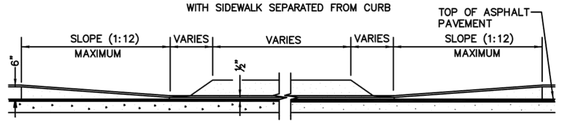
TYPICAL DRIVEWAY SECTION

WITH SIDEWALK ABUTTING EXISTING CURB (WITHOUT GUTTER)



TYPICAL DRIVEWAY SECTION

WITH SIDEWALK SEPARATED FROM CURB



DRIVEWAY CURB PROFILE

TYPE		WIDTHS (MEASURED AT PROPERTY LINE) MIN.	WIDTHS (MEASURED AT PROPERTY LINE) MAX.	CONCRETE THICKNESS (MINIMUM)	REINFORCEMENT	DRIVEWAY BASE
RESI-DENTIAL	SINGLE	10'	12'	5" CLASS A 3,000 PSI	#3 BARS 12" O.C. BOTH WAYS	4" GRAVEL, CRUSHED ROCK OR FLEX BASE (COMPACTED)
	DOUBLE	10'	24'			
COMMERCIAL		24'	40'	7" CLASS A 3,000 PSI	#4 BARS 12" O.C. BOTH WAYS	4" GRAVEL, CRUSHED ROCK OR FLEX BASE (COMPACTED)

NOTES:

1. THE EXISTING CURB SHALL BE REMOVED FOR THE ENTIRE LIMITS OF THE APRON WHEN A NEW DRIVEWAY IS CONSTRUCTED ON AN EXISTING STREET.
2. 24 INCH LONG CURB TRANSITIONS FOR EACH SIDE OF THE APRON WILL BE PROVIDED TO SLOPE THE STREET CURB FROM EXISTING HEIGHT TO THE 1/2 INCH EXPOSURE AT THE DRIVEWAY FOR SIDEWALK ABUTTING CURBS. NO SEPARATE PAY ITEM.
3. DRIVEWAY PENETRATION REFERS TO A PORTION OF THE DRIVEWAY THAT MAY BE NECESSARY TO RECONSTRUCT WITHIN PRIVATE PROPERTY TO COMPLY WITH A MAXIMUM DRIVEWAY SLOPE. THIS PORTION OF THE DRIVEWAY SHALL BE PAID FOR UNDER THE FOLLOWING ITEMS AS MAY APPLY:

   7" MINIMUM HEIGHT WILL NOT NECESSARILY OCCUR AT THE PROPERTY LINE. IT MAY OCCUR WITHIN THE RIGHT OF WAY OR WITHIN THE DRIVEWAY PENETRATION ON PRIVATE PROPERTY.
4. THE PROPOSED DRIVEWAY SHOULD MATCH THE EXISTING WIDTH AT THE PROPERTY LINE, UNLESS GRANTED OTHERWISE AS PART OF APPLICATION TO WORK ON CITY STREETS PERMIT.
5. A MINIMUM OF TWO ROUND AND SMOOTH DOWEL BARS 3/8" IN DIAMETER AND 18" IN LENGTH SHALL BE SPACED 18" APART AT EACH EXPANSION JOINT.
6. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN (1:12) 8 % MAXIMUM SLOPE. WHERE SIDEWALKS CROSS DRIVEWAYS, SIDEWALK CROSS SLOPE SHALL NOT EXCEED 1:48 (2%).
7. SIDEWALK RAMP SURFACE SHALL BE IN ACCORDANCE TO ADA SURFACE TREATMENTS.
8. 10% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.

SEGUIN TEXAS

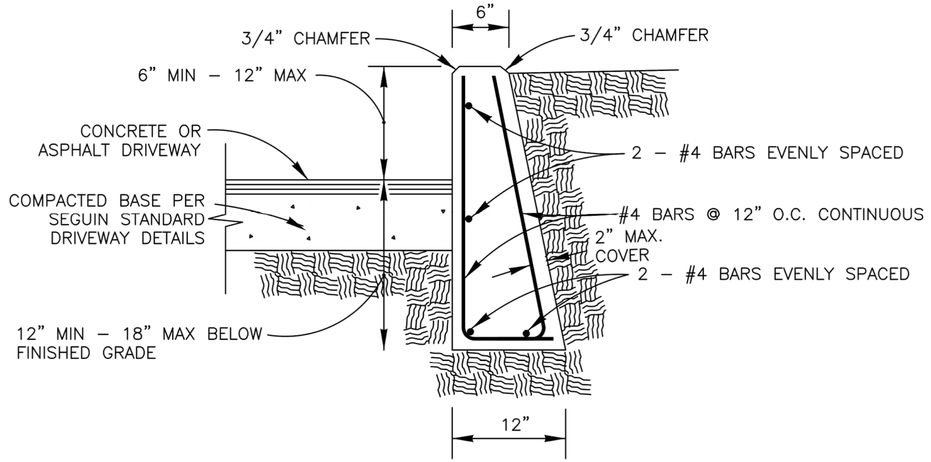
It's real.

DATE ISSUED:	JUNE 1, 2013	
REVISION	DATE	BY
1ST REVISION	11/01/18	MS
2ND REVISION	4/11/24	JS

TITLE: DRIVEWAY DETAILS

SCALE: N.T.S.

DRAWING No.: DRWY–2



DRIVEWAY RETAINING WALL

ON COMPACTED SUBGRADE

NOTES:

1. CLASS "A" CONCRETE WITH REINFORCING AS SHOWN. REINFORCEMENT TO BE INCLUDED IN UNIT COST.
2. CONCRETE RETAINING WALL COMBINATION TYPE SHALL BE USED FOR CONCRETE, ASPHALT, OR GRAVEL DRIVEWAYS.
3. A STAMPED PLAN BY A PROFESSIONAL ENGINEER DULY LICENSED IN THE STATE OF TEXAS IS REQUIRED FOR WALLS EXCEEDING 12 INCHES IN HEIGHT OR VERTICAL GRADE CHANGE.
4. CONCRETE RETAINING WALL SHALL ONLY BE INSTALLED WITH PRIOR APPROVAL BY THE CITY ENGINEER.

SEGUIN TEXAS

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DATE ISSUED:	JUNE 1, 2013	
REVISION	DATE	BY
1ST REVISION	11/01/18	MS
2ND REVISION	4/11/24	JS

TITLE: DRIVEWAY RETAINING WALL DETAIL

SCALE: N.T.S.

DRAWING No.: DRWY–3

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PARK HOUSE UNIT 1

TYPICAL CONCRETE DRIVEWAY DETAILS

DATE: 08/07/2025

PROJECT NO.: 04154-000

DRAWN BY: SG/JVA

CHECKED BY: JL/AC

REVISIONS: 1. 2. 3. 4. 5. 6. 7. 8.

CUDE ENGINEERS
TBPELS No. 10048500

C7.D3

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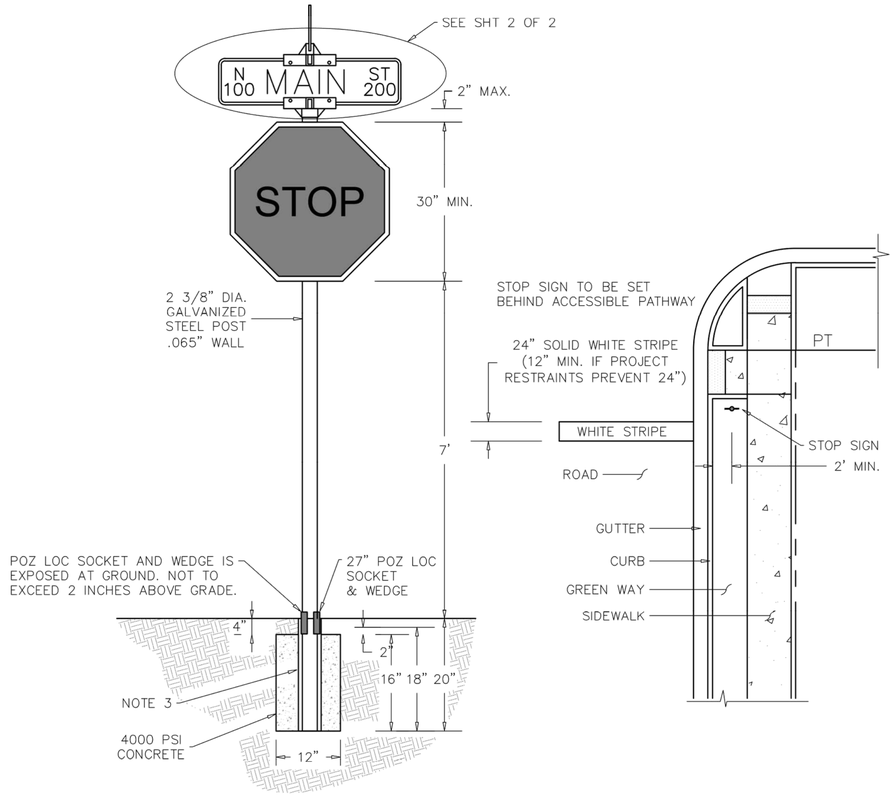
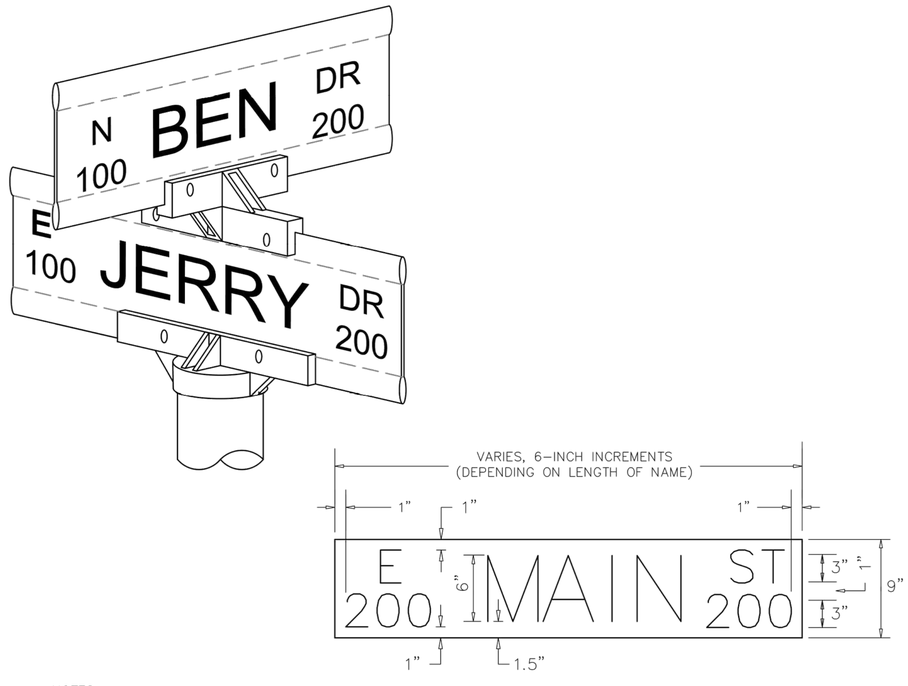


NOTES:

1. SIGNS ON STATE FACILITIES SHALL CONFORM TO TXDOT STANDARDS.
2. DISTANCE FROM THE EDGE OF THE STREET POST TO THE FACE OF THE CURB SHALL BE A MINIMUM OF 2'.
3. SLEEVE WILL BE 18" GALVANIZED STEEL PIPE WITH O.D. 2 7/8" AND I.D. 2 5/8"

SHT 1 OF 2

SEGUIN TEXAS It's real.	DATE ISSUED: DECEMBER 18, 2018			TITLE	
	REVISION	DATE	BY	STREET SIGN INSTALLATION DETAIL	
	1ST REVISION	1/28/19	MS		
	2ND REVISION	10/16/20	MS		
				SCALE: N.T.S.	DRAWING No. RDWY–11.1



NOTES:

1. THE ALPHABETS AND LATERAL SPACING BETWEEN LETTERS AND NUMERALS SHALL CONFORM WITH THE TEXAS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", LATEST EDITION, AND ANY APPROVED CHANGES THERETO. LATERAL SPACING OF TEXT SHALL PROVIDE A BALANCED APPEARANCE. ALL MATERIALS SHALL CONFORM TO TXDOT DEPARTMENT SPECIFICATIONS FOR SMALL STREET SIGNS.
2. SIGN BLANKS SHALL BE 0.080" THICK AND ONE PIECE SHEET ALUMINUM ALLOY EXTRUDED BLADE CONFORMING WITH TXDOT DEPARTMENT SPECIFICATION "ALUMINUM SIGNS (TYPE A)."
3. SIGN BACKGROUND SHALL BE AVERY T–6500 (WHITE) HIGH INTENSITY PRISMATIC (HIP) REFLECTIVE SHEETING MATERIAL MEETING ASTM D4956 (AASHTO M268) TYPE III SPECIFICATIONS.

   FOREGROUND CONSISTS OF AN OVERLAY OF GREEN AVERY SERIES OL–2007 ELECTRO–CUT FILM MEETING ASTM D4956 SPECIFICATIONS. REMOVE LETTER CUTOUT FROM OVERLAY FILM TO ALLOW WHITE BACKGROUND TO SHOW THROUGH. LETTERING SHALL CONFIRM TO MUTCD/FHWA SERIES B "GOTHIC" FONT.
4. SIGN MOUNTING BRACKETS:

   POST CAP – TAPCO MODEL #037–00002 OR EQUIVALENT
   CROSS BRACKET – TAPCO MODEL #037–00008 OR EQUIVALENT
5. CONTRACTORS SHALL SUBMIT A MATERIAL SUBMITTAL TO CAPITAL PROJECTS & ENGINEER AND PUBLIC WORKS DEPARTMENTS FOR APPROVAL PRIOR TO FABRICATION OF ANY STREET SIGNS TO BE INSTALLED WITHIN THE ROW.

SHT 2 OF 2

SEGUIN TEXAS It's real.	DATE ISSUED: DECEMBER 18, 2018			TITLE	
	REVISION	DATE	BY	STREET NAME SIGN PLATE DETAIL	
	1ST REVISION	1/28/19	MS		
				SCALE: N.T.S.	DRAWING No. RDWY–11.2

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PARK HOUSE UNIT 1

TYPICAL STREET SIGN DETAILS

DATE 08/07/2025

PROJECT NO. 04154-000

DRAWN BY SG/JVA

CHECKED BY JL/AC

REVISIONS 1 2 3 4 5 6 7 8

CUDE ENGINEERS TBPELS No. 10048500

C7.D4

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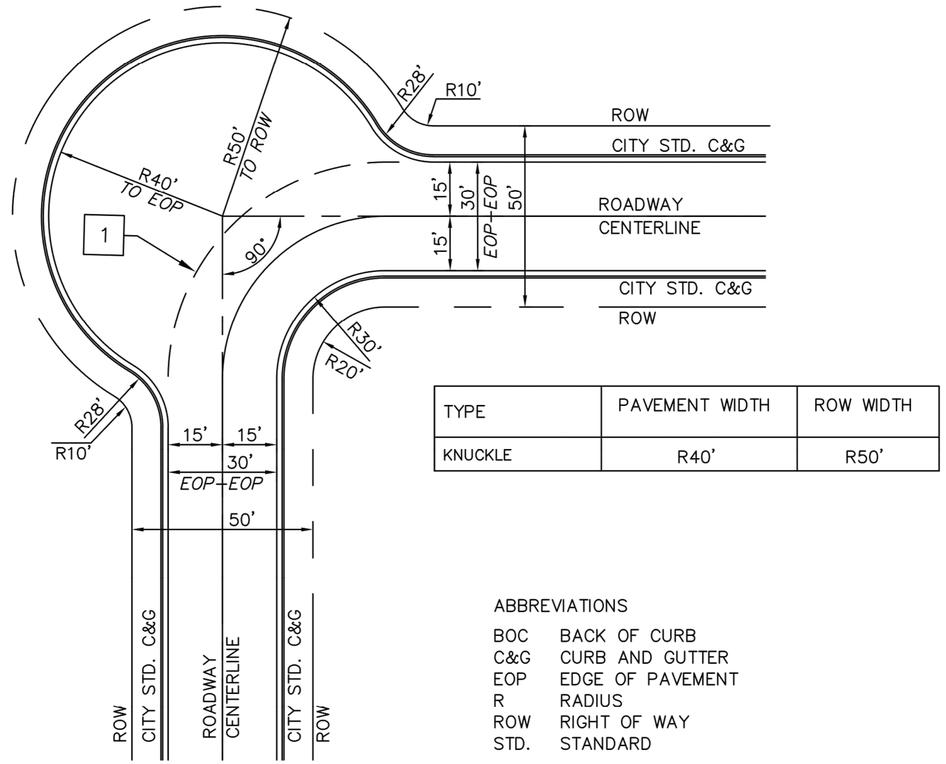

TYPE	PAVEMENT WIDTH	ROW WIDTH
KNUCKLE	R40'	R50'

ABBREVIATIONS

BOC	BACK OF CURB
C&G	CURB AND GUTTER
EOP	EDGE OF PAVEMENT
R	RADIUS
ROW	RIGHT OF WAY
STD.	STANDARD

NOTES:

1. LINE OF PAVEMENT GUTTER WHEN KNUCKLE IS GRADED TOWARD STREET.
2. KNUCKLE DIMENSIONS AND PAVEMENT TYPE SHALL MEET THE REQUIREMENTS OF APPENDIX D OF THE INTERNATIONAL FIRE CODE AND CITY STANDARDS AND REQUIREMENTS.
3. OFFSETS FROM INTERSECTION CENTERLINE TO POINT OF RADIUS IS NOT ALLOWED.

SEGUIN TEXAS
It's real.

DATE ISSUED:	FEBRUARY 16, 2024	
REVISION	DATE	BY
1ST REVISION	2/01/18	MS
2ND REVISION	10/04/24	JS

TITLE: KNUCKLE DETAIL

SCALE: N.T.S.

DRAWING No.: RDWY-12

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PARK HOUSE UNIT 1

TYPICAL KNUCKLE DETAIL

DATE: 08/07/2025
PROJECT NO.: 04154-000
DRAWN BY: SG/JVA
CHECKED BY: JL/AC

REVISIONS
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REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

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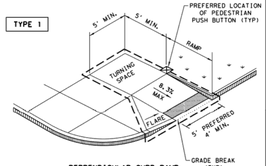
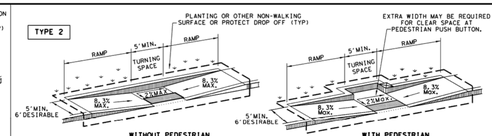
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

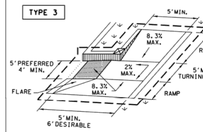


WITHOUT PEDESTRIAN PUSH BUTTON

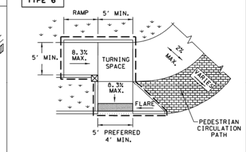
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

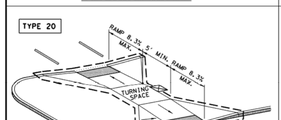


TYPE 6



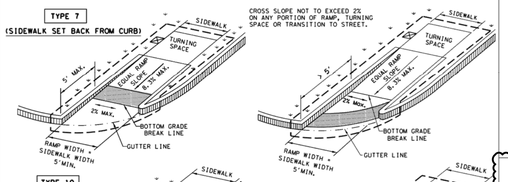
COMBINATION CURB RAMPS

TYPE 20

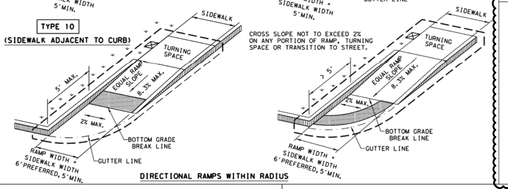


CURB RAMPS AT MEDIAN ISLANDS

TYPE 7
(SIDEWALK SET BACK FROM CURB)

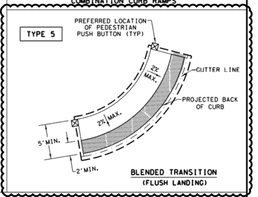


TYPE 10
(SIDEWALK ADJACENT TO CURB)



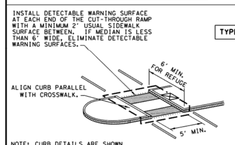
DIRECTIONAL RAMPS WITHIN RADIUS

TYPE 5



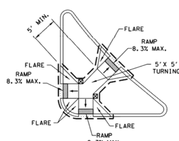
BLENDED TRANSITION
(FLUSH LANDING)

TYPE 21

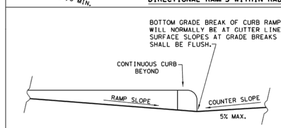


NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	CK: VP	CK: KM	CK: FK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED 08-2005	DIST	COUNTY		SHEET NO.
REVISED 05-2010				
REVISED 07-2014				

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DATE:
FILE:

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, or combined curb and gutter.
18. Existing features that comply with applicable standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

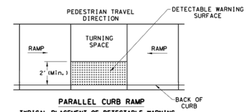
DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

SIDEWALKS

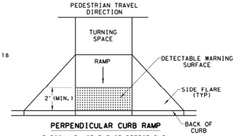
27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.

DETECTABLE WARNING SURFACE DETAILS



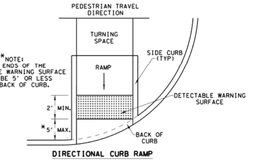
PARALLEL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP

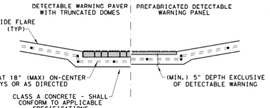
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



*NOTE: BOTH ENDS OF THE DETECTABLE WARNING SURFACE SHALL BE 5' OR LESS FROM BACK OF CURB.

DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

SHEET 2 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	CK: VP	CK: KM	CK: FK & JG
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REVISIONS				
REVISED 08-2005	DIST	COUNTY		SHEET NO.
REVISED 05-2010				
REVISED 07-2014				

NOTE:
- TYPE 5 RAMP ARE ALLOWED ON A CASE BY CASE BASIS WHEN EXISTING CONSTRAINTS WILL NOT PERMIT USE OF TYPE 1, 2, OR 7 RAMPS AND REQUIRE APPROVAL BY THE CITY ENGINEER.

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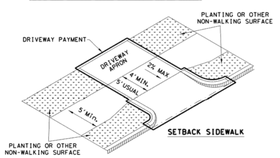
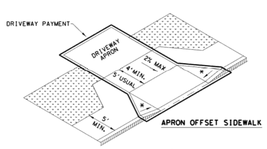
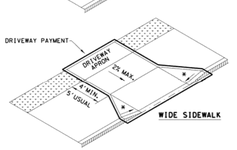
SIDEWALK TREATMENT AT DRIVEWAYS



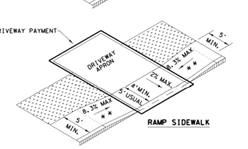
SETBACK SIDEWALK



APRON OFFSET SIDEWALK

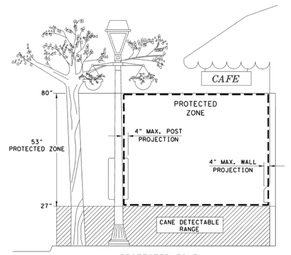


WIDE SIDEWALK



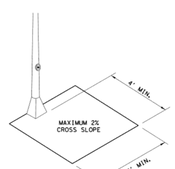
RAMP SIDEWALK

NOTES:
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.
* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

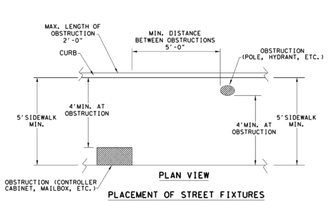


PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



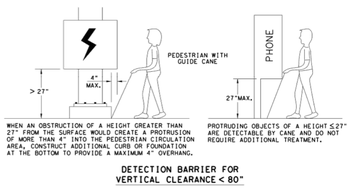
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



PLAN VIEW

PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.

PROTRUDING OBJECTS OF A HEIGHT ≤27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

SHEET 3 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

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REVISED 08-2005	DIST	COUNTY		SHEET NO.
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REVISED 07-2014				

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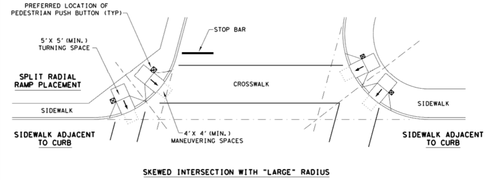
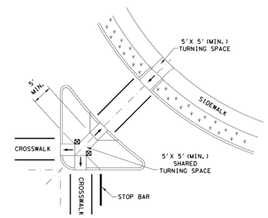
DATE:
FILE:

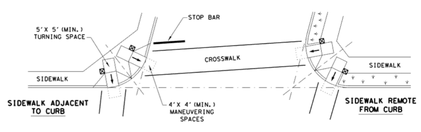
TYPICAL CROSSING LAYOUTS
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



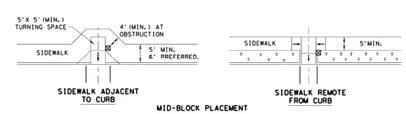
SKEWED INTERSECTION WITH "LARGE" RADIUS



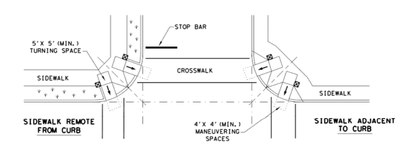
AT INTERSECTION W/FREE RIGHT TURN & ISLAND



SKEWED INTERSECTION WITH "SMALL" RADIUS



MID-BLOCK PLACEMENT PERPENDICULAR RAMPS



NORMAL INTERSECTION WITH "SMALL" RADIUS

LEGEND:

SHOWS DOWNWARD SLOPE.

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE).

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

SHEET 4 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

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CUDE ENGINEERS EST. 1980

1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
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PARK HOUSE UNIT 1

TXDOT PEDESTRIAN FACILITIES DETAILS CURB RAMPS

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

CUDE ENGINEERS
TBPELS No. 10048500

C7.D6

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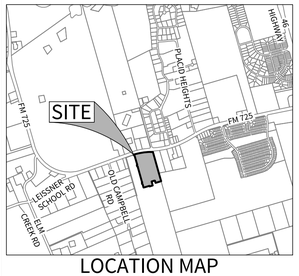
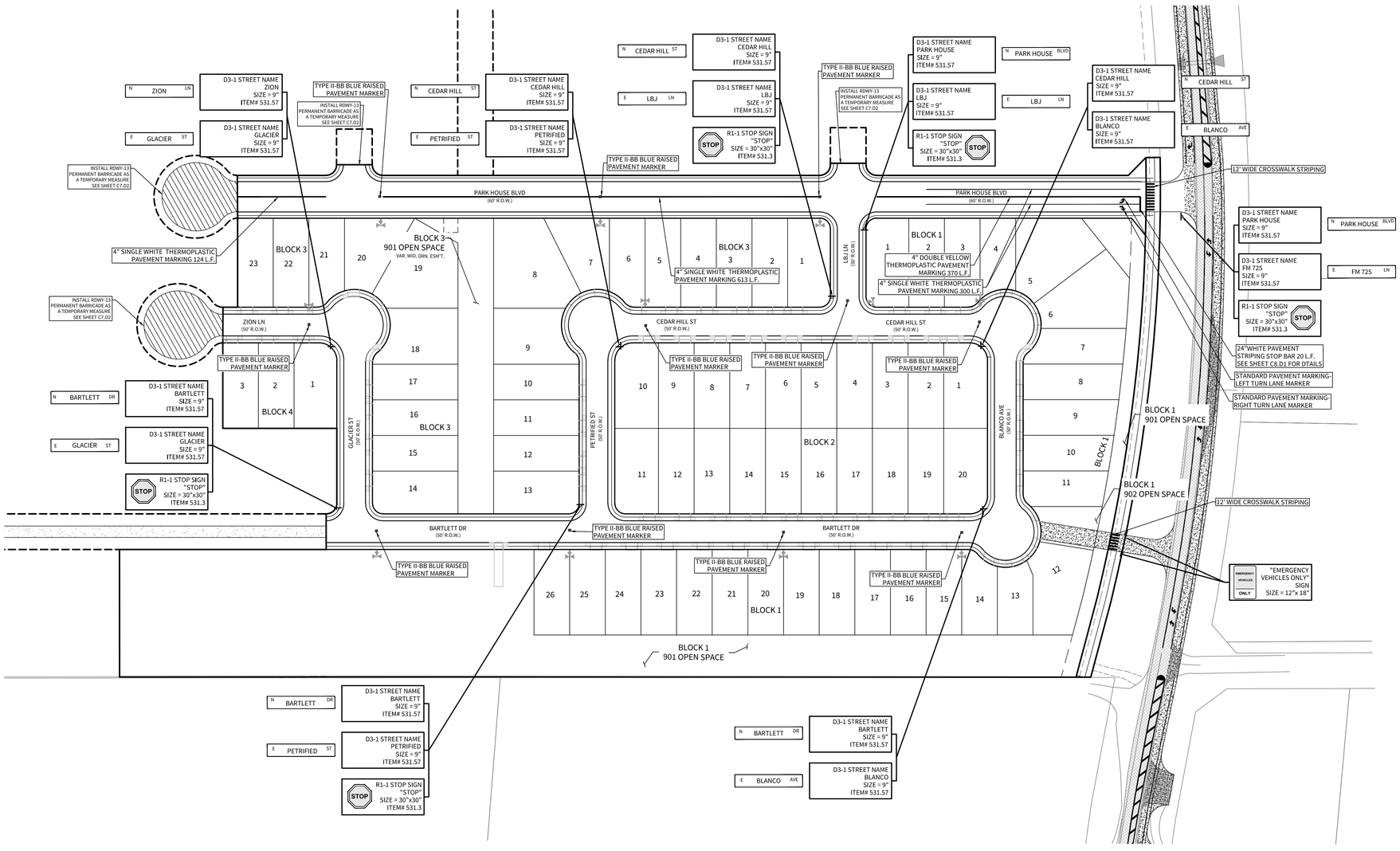
R:\04154\000\D\DWG\Plans\C7\D6 TXDOT PEDESTRIAN FACILITIES CURB RAMPS.dwg 2025/08/07 9:51am sgonzales

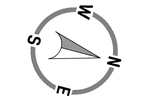


LOCATION MAP
N.T.S

GENERAL NOTE:

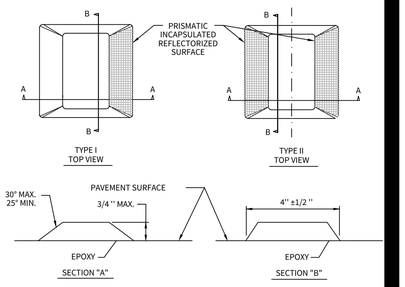
CONTRACTOR TO REFERENCE "STREET NAME SIGN PLATE DETAIL, RDWY 11.2" FOR CITY OF SEGUIN STANDARDS. SEE SHEET C7.D4





SCALE: 1"=80'

0 80 160



1) REFLECTORIZED BLUE - FIRE HYDRANT

2) ADHENSIVE SHALL BE APPLIED IN SUFFICIENT TO ENSURE THE FOLLOWING:
   a) 100 PERCENT OF THE BONDING AREA OF RAISED PAVEMENT MARKERS SHALL BE IN CONTACT WITH THE ADHESIVE.
   b) RAISED PAVEMENT MARKERS SHALL NOT BE IN CONTACT WITH THE PAVEMENT SURFACE, BUT SHALL BE SEATED ON A CONTINUOUS LAYER OF ADHESIVE.
   c) BITUMINOUS ADHESIVE FOR MARKERS ON BITUMIOUS PAVEMENTS. EPOXY ADHENSIVE FOR MARKERS ON PORTLAND CEMENT CONCRETE PAVEMENTS. EPOXY ADHESIVE SHALL BE MACHINE MIXED.

3) RAISED PAVEMENT MARKERS SHALL BE FREE OF RUST, SCALE, DIRT, OIL, GREASE, MOISTURE, OR CONTAMINATES WHICH MIGHT ADVERSELY AFFECT THE ADHESIVE BOND. ADHESIVE OR ANY OTHER MATERIAL THAT IMPAIRS THE FUNCTIONAL REFLECTIVITY WILL NOT BE ACCEPTABLE.

4) PLACEMENT OF RAISED PAVEMENT MARKERS SHALL BE 4 FEET OFF STREET CENTELINE TOWARD ITEM MARKED.

PAVEMENT REFLECTORS DETAIL

N.T.S.

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PARK HOUSE UNIT 1

TRAFFIC SIGNAGE PLAN

DATE
08/29/2025

PROJECT NO.
04154-000

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STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C8.00

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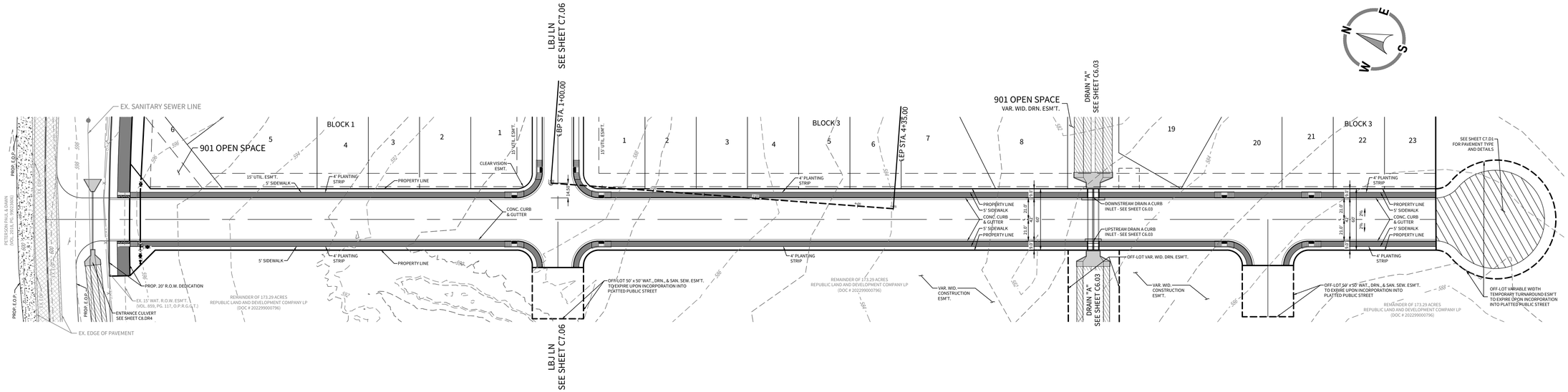

PROPOSED DRIVEWAY LOCATION

CONCRETE RIP-RAP

EARTHEN CHANNEL

STREET WASHOUT

SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

PERMIT IS NEEDED TO WORK ON TxDOT R.O.W.
TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " ▦ "
OR " ▦ " UNLESS OTHERWISE NOTED. (SHEET C7.D6)

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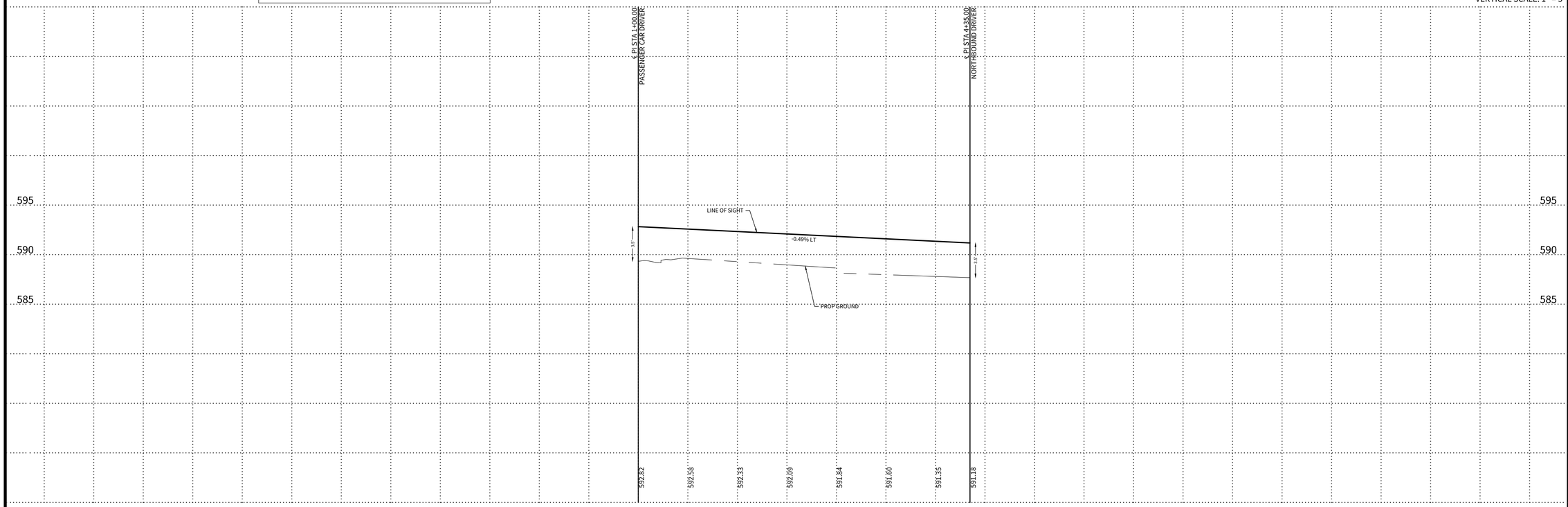
PARKHOUSE BLVD NB (PASSENGER CAR)

STA. 1+00.00 TO STA. 4+35.00

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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PARK HOUSE UNIT 1

PARKHOUSE BLVD SIGHT DISTANCE PLAN

DATE
08/28/2025

PROJECT NO.
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08/29/25

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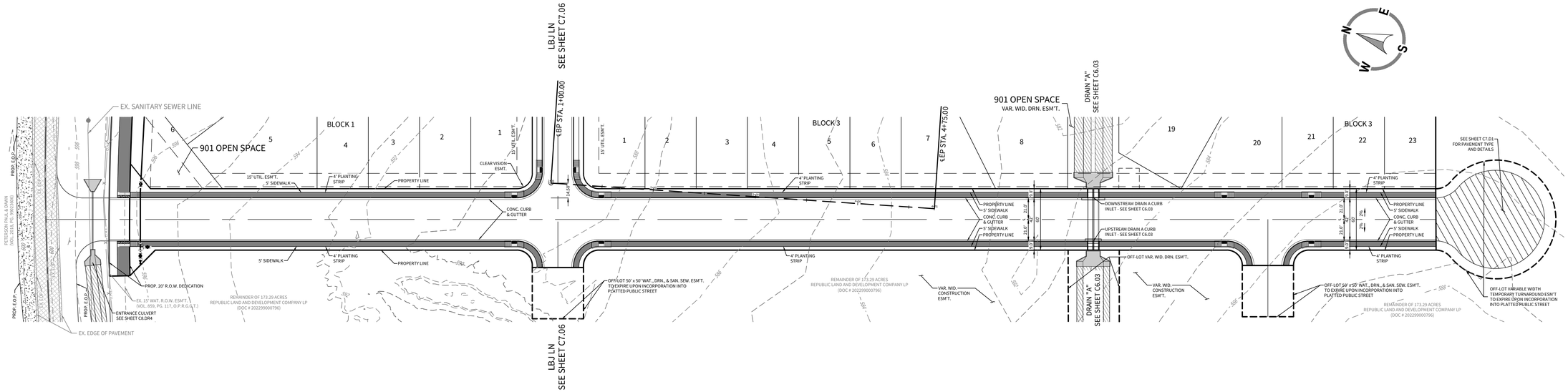

PROPOSED DRIVEWAY LOCATION

CONCRETE RIP-RAP

EARTHEN CHANNEL

STREET WASHOUT

SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

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PARKHOUSE BLVD NB (SINGLE UNIT TRUCK)

STA. 1+00.00 TO STA. 4+75.00

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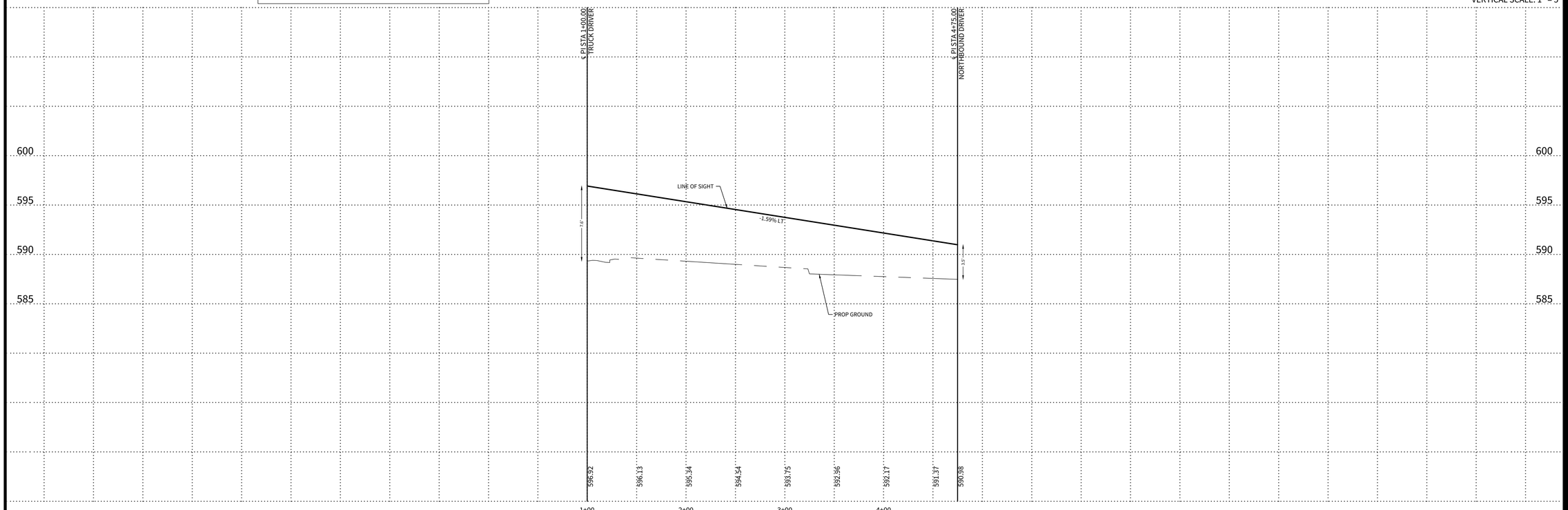

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PARK HOUSE UNIT 1

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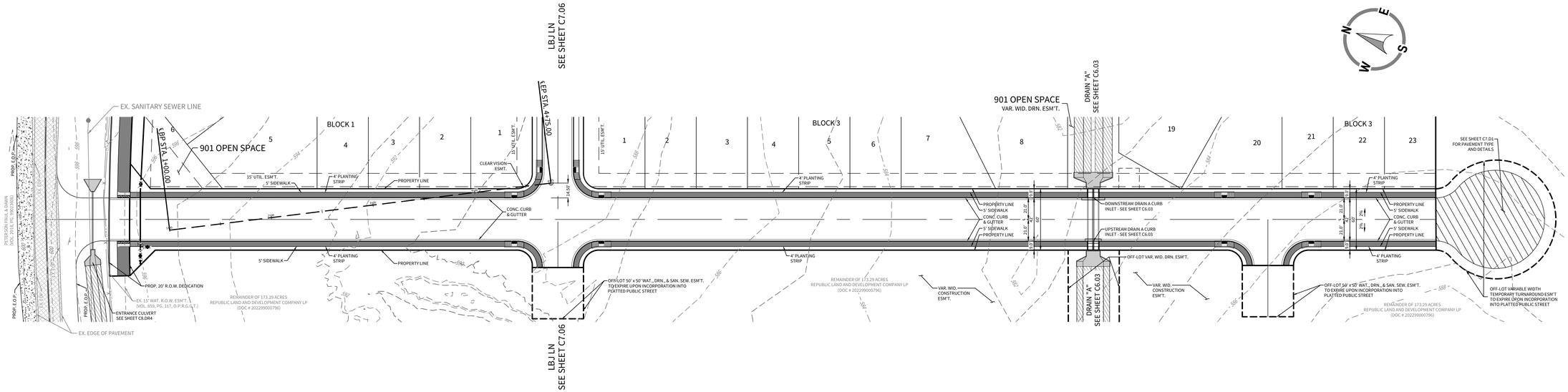

PROPOSED DRIVEWAY LOCATION

CONCRETE RIP-RAP

EARTHEN CHANNEL

STREET WASHOUT

SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

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PARKHOUSE BLVD SB (PASSENGER CAR)

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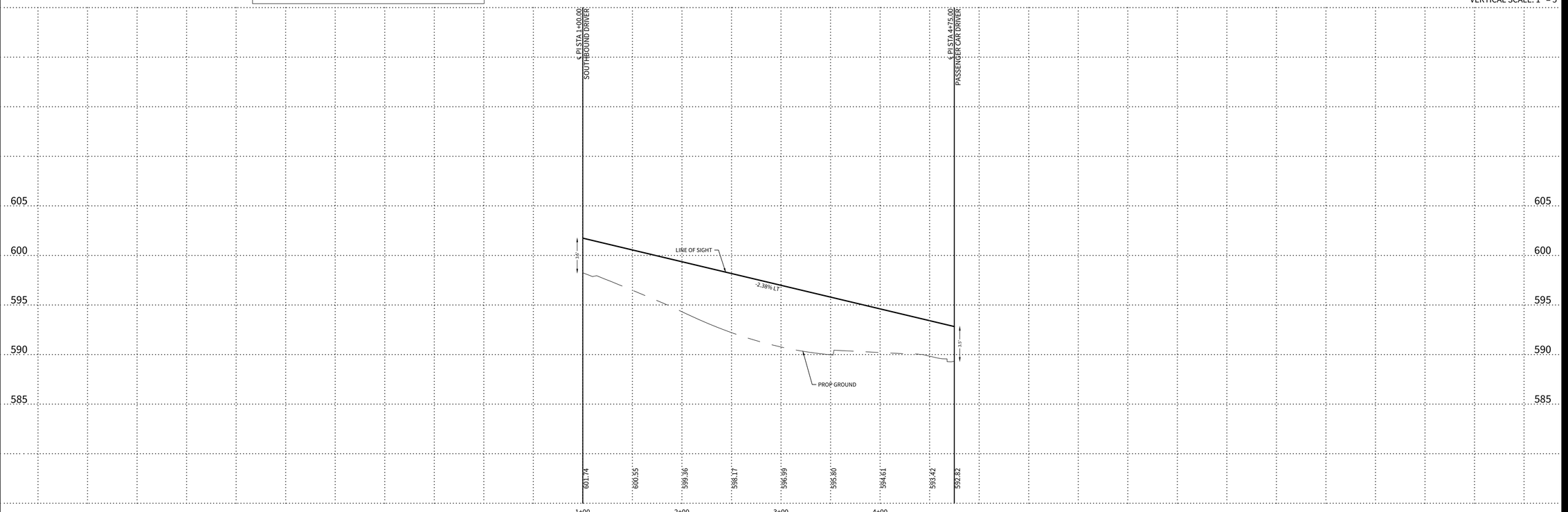

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PARK HOUSE
UNIT 1

PARKHOUSE BLVD SIGHT DISTANCE PLAN

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PROJECT NO.
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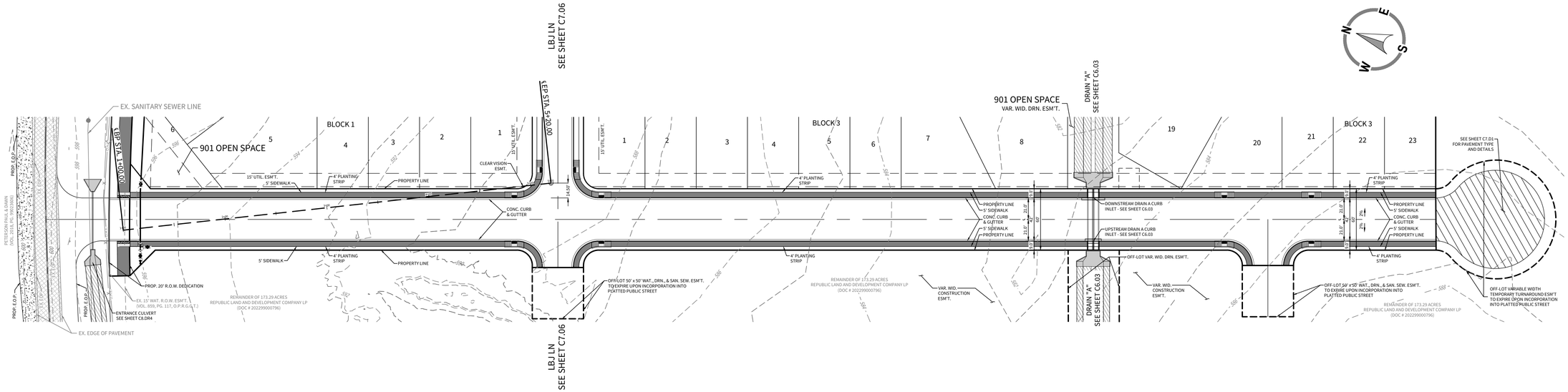

PROPOSED DRIVEWAY LOCATION

CONCRETE RIP-RAP

EARTHEN CHANNEL

STREET WASHOUT

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PARKHOUSE BLVD SB (SINGLE UNIT TRUCK)

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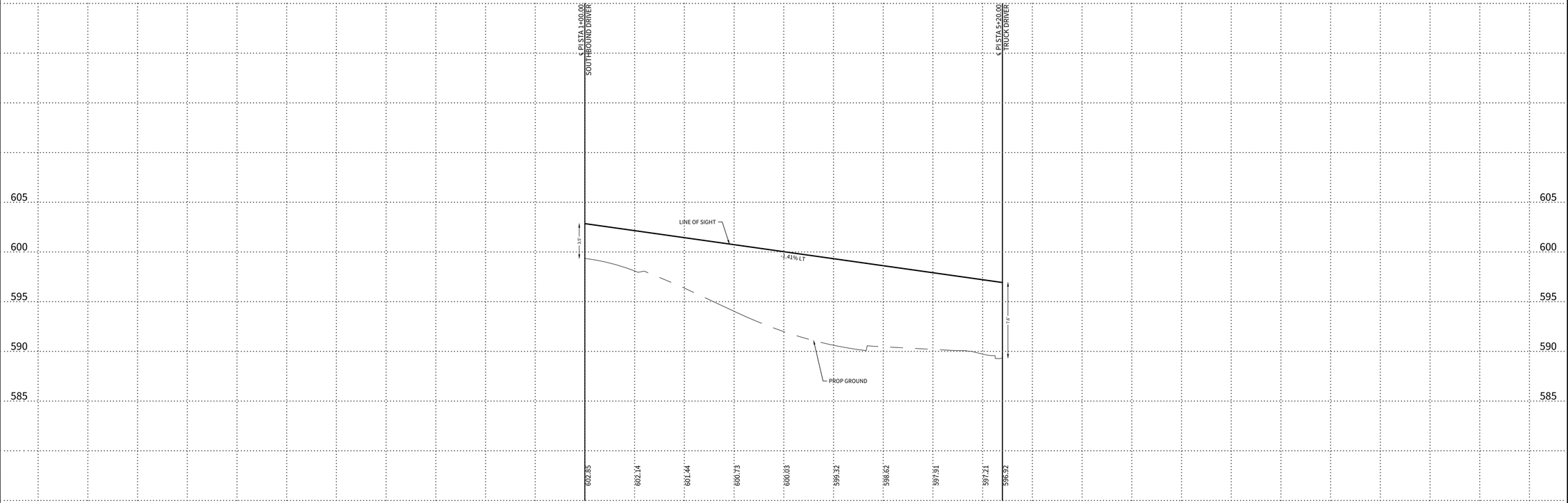

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PARK HOUSE UNIT 1

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County: Guadalupe

Highway: Farm to Market 725

**********GENERAL NOTES**********
2014 Specification Book (Revised June 7, 2018)

========== **Basis of Estimate** ==========

========== **Asphalt Concrete Pavement** ==========

Type	Location	Depth	Rate/Area	Quant-Tons
340 (TY D)	Widening	1.5”	110 LBS/SY/2060 SY	113.30 TONS
340 (TY B)	Widening	8.0”	110 LBS/SY/2060 SY	113.30 TONS

========== **Surface Treatment Data** ==========

Description	1st Course	2nd Course
Area	3,630 SY	3,630 SY

-----See Bid Item-----

Asphalt--(AC-15P) .30 GAL/SY*3,630 SY = 1,089 GAL

Aggregate--(TY-PB GR-4 SAC-B) .009 CY/SY*3,630 SY = 32.67 CY

G-1 The following State, District, Local and/or Utility Standards have been modified: n/a.

G-2 Contact the Engineer or the City when construction operations are within 400 feet of a signalized intersection to determine/verify the location of loop detectors, conduit, ground-boxes, etc. Repair or replace any signal equipment damaged by construction operations. The method of repair or replacement shall be pre-approved and inspected. Depending on the type and extent of the damage, the Engineer reserves the right to perform the repair or replacement work and the Contractor will be billed for this work.

G-3 Remove existing raised pavement markings as the work progresses or as approved. This work is subsidiary to the various bid items. Properly dispose materials removed.

G-4 To better fit field conditions, the cross sections may be varied when approved.

G-5 If there are waste areas or material source areas, follow the Texas Aggregate Quarry and Pit Safety Act requirements.

G-6 Any materials removed and not reused and determined to be salvageable shall be stored within the project limits at an approved location or delivered undamaged to the storage yard as directed. Properly dispose unsalvageable materials in accordance with local, state, and federal regulations. Deface traffic signs so that they will not reappear in public as signs.

G-7 Any sign panels that are adjusted or removed and replaced, shall be done the same workday unless otherwise approved. This work shall be considered subsidiary to Item 502.

G-8 Notify the Engineer at least two weeks prior to a proposed traffic pattern change(s) that will require a revision to traffic signals.

G-9 Locate and reference all manholes and valves within the construction area with station and offset. Each manhole and valve shall be identified by its owner (SHWSC, GVEC, etc.). No roadwork will begin until this list has been submitted. All valves and manhole covers have to be accessible at all times, therefore; temp. CTB, material stock piles, etc. cannot be placed over these valves or covers.

G-10 Adjust or construct all manholes and valves to final pavement elevations prior to the final mat of ACP. If, between the final elevation adjustment and the final mat of ACP, the manholes and valves are going to be exposed to traffic, place temporary asphalt around the manhole and valve to provide a +/- 50:1 taper. The cost of elevation adjustment will be part of the manhole and valve work, and asphalt tapers are part of the ACP work.

G-11 Hurricane Evacuation

Hurricane Season is from June 1 thru November 30. As the closest metropolitan city inland from the Texas Coast, the City of San Antonio is a major shelter destination during mandatory hurricane evacuations. As such, planned work zone lane or road closures may be restricted and/or suspended during mandatory hurricane evacuation operations. The District will coordinate these restrictions at a minimum H-120 from any projected impact to the Texas Coast.

No time charges will be made if the Engineer determines that work on the project was impacted by the hurricane.

The Engineer may order changes in the Traffic Control Plan to accommodate evacuation traffic, and may suspend the work, all or in part, to ensure timely completion of this work. All work to implement changes in the Traffic Control Plan will be paid through existing bid prices or through Item 9.5, Force Account. However, the Department will not entertain any request for delay damages, loss of efficiency that may be attributed to the restriction or suspension of road or lane closures, or to changes in the Traffic Control Plan.

G-12 The Contractor should be aware that the "Guadalupe Valley Electric Cooperative" (GVEC) will be consulted by the Engineer in matters concerning the execution of the work, materials and testing related to the GVEC work. As such; a GVEC employee may be observing the construction and related operations as they progress.

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PARK HOUSE
UNIT 1

TXDOT GENERAL NOTES

DATE
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County: Guadalupe

Highway: Farm to Market 725

G-13 If a sanitary sewer overflow (SSO) occurs:

1. Attempt to eliminate the source of the SSO.
2. Contain sewage from the SSO to the extent possible to prevent contamination of waterways.
3. Call SHWSC at (830) 379-7683.

G-14 The Contractor should be aware that the "Springs Hill Water Supply Corporation" (SHWSC) will be consulted by the Engineer in matters concerning the execution of the joint bid Water and/or Sanitary work. This may include reviewing material submittals and testing related to this work, as well as inspection and observation of the actual work. As such, a SHWSC employee may be reviewing submittals and test results as well as observing the construction and related operations as they progress.

G-15 Submit locate request for SHWSC water and sewer to Dpepin@springshill.org.

--Item 5--

5-1 Reference all existing striping and other pavement markings to allow these markings to be re-established. Ensure the markings (lane lines, edge lines, ramp gores, etc.) are in line with signs, TMS arrows, etc. located on overhead sign supports.

5-2 Taper ACP placed at curb inlets, traffic inlets and slotted drains.

5-3 When a bridge deck is milled, seal coated and overlaid, remove excess material. Do not just broom to the sides of the bridge, under guardrail, etc. Cover or protect all sealed expansion joints and rails on bridges and all railroad tracks encountered as approved. Clean all of these features if they weren't properly protected. This work is subsidiary work to applicable bid items.

5-4A. Prior to letting, bidders may obtain a free computer diskette or a computerized transfer of files (from the Engineer's office) that contains the earthwork information. If copies of the cross-sections in addition to, or instead of, the CD are requested, they will be available at the Engineer's office for borrowing by copying companies at the bidder's expense.

5-5 When working near aerial electrical lines or utility poles, comply with Federal, State and local regulations. A horizontal boom or equivalent equipment is required for construction in the vicinity of the GVEC electric lines in order to provide vertical clearance of equipment during construction. Contact GVEC sixteen (16) week in anticipation of pole bracing. The estimated duration for pole 5-7 bracing is 6 to 10 weeks (or longer if temporary construction easements are required) after invoice is paid. For de-energizing or sleeving of the overhead electrical lines depicted on the plans, please contact GVEC sixteen (16) week in anticipation of needed de-energization. The estimated duration for de-energizing is approximately 4 to 6 weeks (after invoice is paid) but could vary on system scenario and backfeed requirements. De-energizing may not be possible in all instances or may be restricted during specific periods of time due to load demand. Contractor will be reimbursed for the invoice cost for pole bracing and/or de-energizing or sleeving through force account.

5-6 Prevention of Migratory Bird Nesting

It is anticipated that migratory birds, a protected group of species, may try to nest on bridges, culverts, vegetation, or gravel substrate, at any time of the year. The preferred nesting season for migratory birds is from February 15 through October 1. When practicable, schedule construction operations outside of the preferred nesting season. Otherwise, nests containing migratory birds must be avoided and no work will be performed in the nesting areas until the young birds have fledged.

5-7 Structures

Bridge and culvert construction operations can not begin until swallow nesting prevention is implemented, until after October 1 if it's determined that swallow nesting is actively occurring, or until it's determined swallow nests have been abandoned. If the State installed nesting deterrent on the bridges and culverts, maintain the existing nesting deterrent to prevent swallow nesting until October 1 or completion of the bridge and culvert work, whichever occurs earlier. If new nests are built and occupied after the beginning of the work, do not perform work that can interfere with or discourage swallows from returning to their nests. Prevention of swallow nesting can be performed by one of the following methods:

1. By February 15 begin the removal of any existing mud nests and all other mud placed by swallows for the construction of nests on any portion of the bridge and culverts. The Engineer will inspect the bridges and culverts for nest building activity. If swallows begin nest building, scrape or wash down all nest sites. Perform these activities daily unless the Engineer determines the need to do this work more frequently. Remove nests and mud through October 1 or until bridge and culvert construction operations are completed.

2. By February 15 place a nesting deterrent (which prevents access to the bridge and culvert by swallows) on the entire bridge (except deck and railing) and culverts.

No extension of time or compensation payment will be granted for a delay or suspension of work caused by nesting swallows. This work is subsidiary to the various bid items.

Provide a non-intrusive back-up alarm system on all heavy equipment used in close proximity to residential areas. This item is subsidiary to various bid items.

--Item 6--

6-1 Show the stockpile lot and/or sub lot numbers on all tickets for all materials.

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PARK HOUSE
UNIT 1

TXDOT GENERAL NOTES

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County: Guadalupe

Highway: Farm to Market 725

--Item 7--

7-2 The total disturbed areas within the project is anticipated at less than one (1) acre. Due to this type of construction, the project qualifies for exclusion under the Construction General Permit (CGP) issued by the Texas Commission on Environmental Quality (TCEQ). However; should the sum of the Engineer's anticipated disturbances and the Contractor's (On ROW and off ROW) PSL's equal or exceed the one (1) acre threshold; both TxDOT and the Contractor have project responsibilities under the CGP that reverts to non-exclusion status. Obtain approval for all non-depicted areas of disturbance that increases the initial soil and vegetation disturbed area estimates before work starts at these locations.

7-3 Notify the Engineer of the disturbed acreage within one (1) mile of the project limits. Obtain authorization from the TCEQ for Contractor PSL's for construction support activities on or off ROW.

7-4 The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

7-5 No significant traffic generators events identified.
OR

Roadway closures during the following key dates and/or special event are prohibited. See the TCP Narrative for these dates.

--Item 8--

8-1 Working days will be computed and charged in accordance with Article 8.3.1. 8:30 AM: 4:30 PM -Day work week.

8-5 Create and maintain a Critical Path Method schedule.

8-6 A lane closure assessment fee will be assessed as per the "Lane Closure Assessment Fee Table" in the plans.

--Item 9— 164-1164164-1

9-1 When approved, provide uniformed, off-duty law enforcement officers with marked vehicles during work that requires a lane closure. The officer in marked vehicles shall be located as approved to monitor or direct traffic during the closure. The method used to direct traffic at signalized intersections shall be as approved. Additional officers and vehicles may be provided when approved or directed.

Complete the daily tracking form provided by the department and submit invoices that agree with the tracking form for payment at the end of each month approved services were provided.

Show proof of certification by the Texas Commission on Law Enforcement Standards.

All law enforcement personnel used in Work Zone Traffic Control shall be trained for performing duties in work zones and are required to take "Safe and Effective Use of Law Enforcement Personnel in Work Zones" (Course #133119) which can be found online at the following site: www.nhi.fhwa.dot.gov

Certificates of completion should be available to all who finish the course. These should be kept by the officers in order to substantiate completion when reporting to the work site.

Minimums, scheduling fees, etc. will not be paid; TxDOT will consider paying cancellation fees on a case by case basis.

--Item 100--

100-1 Begin clearing operations after trees and other areas of vegetation to be protected have been identified and approved. Install fencing around features to be protected as shown in the plans or directed. Coordinate all right of way clearing operations with the SW3P.

100-2 Trim and remove brush and trees as needed for construction operations. Obtain approval for proposed method of tree and brush trimming and removal. Vertical flailing equipment is not allowed. Treat damaged or cut branches, roots and/or stumps of all oak trees with a commercial tree wound dressing. Disinfect all pruning tools with a solution of 70% alcohol before moving from one tree to another. Unless otherwise approved remove all resulting vegetative debris from the ROW within 24 hours. The Engineer can stop all construction operations if the dressing, cut and removal requirements are not followed.

--Item 110--

110-1 Where excavation extends beyond a right of way fence, remove and replace the fence to a comparable condition. This work shall be considered subsidiary to the bid item.

--Item 164--

Drill seeding of permanent grasses requires the use of approved grass seeding equipment capable of properly storing and metering the release of small seeds (such as Bermuda grass) separately from fluffy type seeds (such as bluestems). Equipment manufactured for planting grain crops is acceptable for planting temporary cool season seeds, but not for planting the permanent seed mix.

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Highway: Farm to Market 725

If performing a permanent seeding in an area with established temporary grass cover and mowing is performed instead of tilling, seed and fertilizer may be distributed simultaneously during "Broadcast Seeding" operations, provided each component is applied at the specified rate.

--Item 166--

166-1 Use a fertilizer with an analysis of 13-13-13 (50% of the total N must be sulfur coated urea) to apply 60 lbs of actual N per acre. This requires 460 lbs of 13-13-13 per acre or .095 lbs per SY of area.

--Item 168--

168-1 Apply vegetative watering as needed to supplement natural rainfall during the vegetation establishment period. Plan quantity of irrigation water is based on the application of a total of 1.3 gal of water each week for each sq. yd. of area that is sodded or seeded. Establishment time is estimated to be 12 weeks for both sod and permanent seed mixes. Temporary seeding will require less time for establishment. Provide a schedule and coordinate watering cycles and rates per cycle with the Engineer. Obtain approval if the quantity of water to be applied is expected to exceed the plan quantity. Adjust the amount of water applied with each cycle and the number of cycles each wk. according to actual site conditions. Drought or other conditions, as determined by the Engineer, may require the application of supplemental irrigation during hours other than normal working hours.

--Item 247—

247-1 There is no minimum PI requirement for this project.

--Item 302--

302-1 Previously tested aggregates found to contain excessive quantities of dust (more than 0.5 percent passing the No. 40 sieve) during precoating, stockpiling or hauling operations, may be rejected. Use Test Method Tex-200-F, Part I for testing.

302-2 Precoated Aggregate Type PE shall consist of crushed slag, crushed stone or natural limestone rock asphalt.

302-3 The Engineer will utilize the Ignition Oven Method (Tex 236-F) for aggregate gradation, with the option of utilizing belt or vacuum extraction gradation in the event the ignition oven malfunctions.

--Item 305--

305-1 All reclaimable asphalt pavement (RAP) material will be retained by the Contractor.

--Item 316—

316-1B. Asphalt season will be year around but meet sections 316.4.4.1 through 4.4.3

316–2 Ensure that the asphalt for precoating the aggregate and the asphalt used for the surface treatment will not result in a reaction that may adversely affect the bonding of the aggregate and asphalt during the surface treatment operation.

Do not add bag house fines in the production of precoated material. 2.

316-3 Clean all concrete curbs, islands, medians, etc. that get coated with asphalt.

--Item 320--

320-1 Construct all longitudinal ACP joints adjacent to a travel lane with a joint maker device that will create a 3:1 to 6:1 taper. For placement of 2 inches or more, the device shall provide a maximum ½ inch vertical edge. Taper outside edges (next to the grass) or backfill (shoulder-up) the same day.

320-2 Provide a material transfer device capable of providing a continuous flow of material to the paver. The material transfer device will consist of a windrow elevator or better.

320-3 When placing Item 346 mixtures, Use a self-propelled wheel mounted MTV capable of receiving mix from the haul trucks, separate from the paver. It shall have a minimum storage capacity of approximately 25 tons. It shall be equipped with a pivoting discharge conveyor and shall completely and thoroughly remix the material prior to placement. The effectiveness of the MTV's remixing ability is subject to the approval of the Engineer. In addition, the paver shall have a surge storage insert with a minimum capacity of 20 tons.

--Item 330--

330-1 The asphalt plant shall have truck scales as defined in Item 520. Give three weight tickets bearing the date, the truck number, and the gross, net & tare weights to the truck driver, for the State inspector at the spreading and finishing operation. Trucks may be required to weigh on public scales or portable platform scales to verify the weight of the ticket.

330-2 Use trap rock or crushed slag as the special aggregate for LRA.

330-3 If LRA is stockpiled where it might get contaminated with foreign materials, the bottom of the stockpile can not be used. A set of standard truck scales will be used to determine the quantity of contaminated material that will be deducted. Unless approved, do not stockpile LRA more than 10 days prior to lay-down operations.

330-4 The fluxing material shall be either an emulsified combination of asphalt and softening agent added individually (the softening agent may also be an emulsion), or a material meeting the requirements of Item "Asphalt's, Oils and Emulsions". The material(s) selected shall be approved.

--Item 340, 341, 342, 344, 346, 347, & 348—

1. Table 10, in Item 340, Table 10 in Item 341 and Table 11in Item 344, Hamburg Wheel Test Requirements tested in accordance with Tex-242-F are changed for PG 64-22 or lower and PG 70-22. Minimum number of passes at 1/2" Rut Depth, Tested at 122 degrees F will be 5,000 and 10,000 respectively.

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County: Guadalupe

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2. Design all mixture types using a target laboratory-molded density of 96.5%, when the Texas Gyrator Compactor is utilized. Increase the target laboratory-molded density to 97.0% or 97.5% at the Contractor's discretion. When utilizing SGC, design all mixture types at 50 gyrations (N-Design) and a target laboratory-molded density of 96.0%, but may be reduced to no less than 35 gyrations at the Contractor's discretion.

3. The asphalt plant shall have truck scales as defined in Item 520. Give three weight tickets bearing the date, the truck number, the gross, net & tare weights to the truck driver for the State inspector at the spreading and finishing operation. Trucks may be required to weigh on public scales or portable platform scales to verify the weight of the ticket.

4. Submit a copy of the Tex 233-F production charts on a weekly basis. At the end of the ACP work, provide all originals.

5. Crushing of aggregate for hot mix and immediate use for production of the mix is not allowed. Stockpile the aggregate until enough material is available for five days of production unless prior approval is provided. Hold a pre-placement meeting one month prior to the placement of the hot mix.

6. The main purpose of hot mix cores taken by the State are for payment calculations. If (for quality control purposes) the core information is needed sooner, take additional cores.

7. Do not use diesel or solvents as asphalt release agents in production, transportation, or construction. A list of approved asphalt release agents is available from the District Laboratory.

8. No more than one hot mix lot will be open for any specific type of hot mix, unless authorized. After a lot is open and the Contractor gets approval to change plants, the previous lot will be closed and a new lot will be opened. The numbering for the lots produced at the new plant will start with No. 1. If allowed to switch back to the original or previous plant, the next lot from that plant will resume numbering sequentially from the last lot produced by that plant.

9. Schedule lay-down placement where uneven travel lanes are minimized and eliminated weekly.

10. If asphalt material is obtained from other than a commercial source presently inspected by TxDOT, furnish a Type D structure for the asphalt mix control laboratory for the Engineer's use. Provide a minimum height of 8 feet and a minimum of 400 square feet of gross floor area for permanently located asphalt plants or 200 square feet for a temporary plant. The floor area will be partitioned into a minimum of two rooms, with a minimum of two windows per room. The floor shall have an impervious cover and sufficient strength to support the testing equipment. Portable structures shall be support blocked for stability and shall be tied down. **1.**

11. The use of Recycled Asphalt Shingles (RAS) will not be allowed on the final riding surface.

12. When placing item 346 mixtures, utilize a material transfer vehicle as defined in the plans for item 320.

Minimum Roadway Placement Temperature
--Item340, 341, & 344--

1. Place mixture when the roadway surface temperature is equal to or higher than listed in Table 1 unless otherwise approved or shown on the plans. Measure the roadway surface temperature with a hand-held thermal camera or infrared thermometer. Placement may be allowed to begin prior to the roadway surface reaching the required temperature if conditions are such that the roadway surface will reach the required temperature within 2 hrs. of beginning placement operations. Place mixtures only when weather and moisture conditions of the roadway surface are suitable in the opinion of the Engineer. The Engineer may restrict the Contractor from paving if the ambient temperature is likely to drop below 32°F within 12 hr. of paving.

Table 1
Minimum Pavement Surface Temperatures

Specification Item Number	High Temperature Binder Grade	Minimum Pavement Surface Temperatures in Degrees Fahrenheit *	
		Subsurface Layers or Night Paving Operations	Surface Layers Placed in Daylight Operations
340, 341, & 344	PG 64	45	50
	PG 70	55	60
	PG 76	60	60

* Except for PG 64, may pave at temperatures 10º F lower than the values shown in Table 1when utilizing a Material Transfer Vehicle that is capable of providing a remixing, and continuous flow of material from the haul truck to the paver, such as a Roadtec SM-2500e/ex, that eliminates thermal segregation. In these cases, use either an infrared bar attached to the paver, or a hand held thermal camera or infrared thermometer, or a hand held infrared thermometer operated in accordance with Text Method 244-F to demonstrate that the uncompacted mat has no more than 10º F of thermal segregation.

Substitute Binder
--Item340, 341 & 344—

The Contractor may use a substitute PG binder listed below in Table 1 instead of the PG binder originally specified in Table 5 of the Standard Specification, if the substitute PG binder and mixture made with the substitute PG binder meet the following:

- The substitute binder meets the specification requirements for the substitute binder grade in accordance with Section 300.2.10., "Performance-Graded Binders;" and

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County: Guadalupe

Highway: Farm to Market 725

- The mixture has less than 10.0 mm of rutting on the Hamburg Wheel test (Tex-242-F) after the number of passes required for the originally specified binder. Use of substitute PG binders may only be allowed at the discretion of the Engineer if the Hamburg Wheel test results are between 10.0 mm and 12.5 mm.

Table 1
Allowable Substitute PG Binders and Maximum Recycled Binder Ratios

Originally Specified PG Binder	Allowable Substitute PG Binder	Maximum Ratio of Recycled Binder[1] to Total Binder (%)		
		Surface	Intermediate	Base
HMA				
76-22[2,5]	70-22	20.0	20.0	20.0
	70-28	20.0	35.0	40.0
70-22[2]	64-22	20.0	20.0	20.0
	64-28 or 58-28	20.0	35.0	40.0
64-22[2]	58-28	20.0	35.0	40.0
76-28[2,5]	70-28	20.0	20.0	20.0
70-28[2]	64-28 or 58-28	20.0	20.0	20.0
	64-34 or 58-34	20.0	35.0	40.0
64-28[2]	58-28	20.0	20.0	20.0
	58-34	20.0	35.0	40.0
WMA[3]				
76-22[2,5]	70- 22	20.0	35.0	40.0
70-22[2]	64-22 or 58-28	20.0	35.0	40.0
64-22[4]	58-28	20.0	35.0	40.0
76-28[2,5]	70-28	20.0	35.0	40.0
70-28[2]	64-28 or 58-28	20.0	35.0	40.0
64-28[4]	58-28	20.0	35.0	40.0

1. Combined recycled binder from RAP and RAS.
2. Use no more than 20.0% recycled binder when using this originally specified PG binder.
3. WMA as defined in Section 341.2.6.2., "Warm Mix Asphalt (WMA)."
4. When used with WMA, this originally specified PG binder is allowed for use at the maximum recycled binder ratios shown in this table.
5. No more than 1-PG grade lower than what is show on the plans will be permitted for Surface mixtures

--Item 354--

354-1 Retain planned material.

--Item 401--

401-1 A shrinkage compensator is not required for when used for backfilling pipes. Strength of the Flowable Backfill will be verified by the District Laboratory. Field testing is not required, unless deemed necessary.

--Item 421--

421-1 Use an automated ticket that contains the same information as TxDOT's ticket. Submit the ticket for approval prior to use. The concrete producer will contact the District Laboratory or the Engineer's Office (outside the Seguin area) to inform TxDOT of scheduled structural concrete batching. Structural concrete includes bridge drill shafts, columns, caps, abutments, deck or top slabs of direct traffic culverts.

421-2 Entrained air is allowed for Class P and Class HES concrete only. Air content testing is waived for all classes of concrete.

421-3 The curing facilities and strength testing equipment is not required for this project.

--Item 432--

432-1 In all riprap slopes, provide 3 inch diameter weep holes at 10 foot maximum spacing and backed with loose graded gravel or crushed stone and galvanized hardware cloth.

432-2 In areas where guard fence posts are to be placed in riprap, the riprap shall have an 18 inch +/- blocked out area (round or square). After the posts are installed, the blocked out area shall be topped off with 4 inches of low strength grout/mortar consisting of about 1 sack of cement per cubic yard of mix.

432-3 Match the slope of the Riprap (Mow Strip) to the slope of the adjacent roadway.

--Item 465--

465-1 Concrete Class B invert shaping is required at all inlets, manholes and junction boxes in order to insure positive flow. The material and work performed for the placement of the inverts shall be considered subsidiary to this item.

--Item 502--

502-1 Place standard markings no later than 14 days after surface treatment operations are completed.

502-2 When advanced warning flashing arrow panels and/or changeable message sign is specified, have one standby unit in good condition at the job site. Standby time shall be considered subsidiary to the bid item.

502-3 Treat the pavement drop-offs as shown in the TCP.

502-4 After written notification, the time frame to provide properly maintained signs and barricades before considered in non-compliance is 48 hours from receipt of the notification. Failure to make corrections as noted may result in payment for this item being withheld.

502-6 Moving an existing sign to a temporary location is subsidiary to this Item. Installations with permanent supports at permanent locations will be paid for under the applicable bid item (s).

502-8 Notify the Engineer in writing 10 business days in advance of any temporary or permanent lane, ramp, connector, etc. closures/detours, restrictions to lane widths, alterations to vertical clearances, or modifications to radii. Any other modifications to the roadway that may adversely affect the mobility of oversized/overweight trucks also require 10 business days

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advance written notice to the Engineer. Unless shown in the TCP, no lane, ramp, connector, etc. closures are allowed during special events. At least one lane has to remain open at all times. Lane closures will not be allowed if this reporting requirement is not met.

502-8A For closures not listed in the TCP; the lane closures are limited to between the hours of 9:00 AM – 4:00 PM, and at least one lane has to remain open at all times.

502-9 Avoid placing stockpiles within the roadway's horizontal clear zone. If a stockpile is placed within the clear zone, address in accordance with the TMUTCD.

502-10 Do not place barricades, signs, or any other traffic control devices where they interfere with sight distance at driveways or side streets.

502-11 In addition to providing a Contractor's Responsible Person and a phone number for emergency contact, have an employee available to respond on the project for emergencies and for taking corrective measures within 2 hours or within a reasonable time frame as specified by the Engineer.

502-13 If Nighttime work is required and work is not behind positive barrier then full TY 3 reflective gear is required to be worn by all workers, hard hat halos are required to be worn by the flaggers at flagging stations, TY III barricades are required to be spaced at 500 ft, and a mandatory night work meeting is required.

--Item 506--

506-1 An Inspector will perform a regularly scheduled SWP3 inspection every 7 calendar days.

506-3 Failure to address items noted on the SW3P inspection report within two report cycles may result in the Department stopping all construction operations, exclusive of time charges, or withholding that month's estimate until the SW3P deficiencies are corrected unless the Engineer determines that the area is too wet to correct SW3P deficiencies.

--Item 512--

512-2 Only new Single Slope CTB (cast in accordance with the Standard Sheets in the plans) or the same pre-used shape (that meet the requirements of this item) may be furnished on the inside shoulder/inside median of the Interstate Main Lanes.

--Item 529—

529-1 Class "C" concrete is required for machine extruded curb.

--Item 540--

540-1 MBGF posts shall be round with domed tops, and not painted. If 10 or less timber posts are needed, they may be purchased locally and will be accepted by visual inspection.

540-2 Guard fence posts placed in proposed and/or existing areas of riprap, sidewalks or other concrete shall have an 18 inch +/- (square or round) block out in the concrete. After the posts are installed, the blocked out area shall be topped off with 4 inches of low strength grout/mortar consisting of about 1 sack of cement per cubic yard of mix.

--Item 585--

585-1A Use Surface Test Type B, to evaluate ride quality of travel lanes.

585-1B Ride quality requirements are waived.

--Item 666--

666-1 Use TY II material (vs. an acrylic or epoxy) as the sealer for the TY I markings, place the TY II a minimum of 14 calendar days (to provide adequate curing) before placing the TY I markings.

--Item 672--

672-1 Place all adhesive material directly from the heated dispenser to the pavement. Do not use portable or non-heated containers. Use adhesive of sufficient thickness so that when the marker is pressed into the adhesive, 1/8" or more adhesive will remain under 100% of the marker. The adhesive should extend not less than 1/2" but not more than 1 1/2" beyond the perimeter of the marker.

--Item 730--

730-1 Mow full-width and hand trim the right of way, including newly seeded or sodded areas, when vegetation reaches a height of 16" or when directed. Removal of brush sprouts growing within guardrail, concrete barriers or at other locations where mowing or hand trimming is done within the limits of construction is required and subsidiary to this item. Mowing may be required more often in newly sodded or seeded areas than in other parts of the project because of the supplemental irrigation these areas receive and the resulting weed growth. Coordinate mowing to avoid rutting or compaction of the soil when mowing where supplemental irrigation is being used. Use mowing equipment that will not adversely affect soil retention blankets or mulches that have been applied. Work performed under this item does not replace the mowing required when placing permanent seeding in an area that has established temporary seeding as described in Article 164.3, Construction.

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1. THE DESIGN AND CONSTRUCTION WILL PROVIDE FOR PRESERVING ALL EXISTING FEATURES IN OR NEAR THE STATE RIGHT OF WAY BEING AFFECTED BY THE WIDENING. THIS INCLUDES BUT IS NOT LIMITED TO, EXISTING DRIVEWAY GATE SET-BACKS, RELOCATION OF ELECTRONIC PRIVATE PROPERTY GATES, MAILBOX TURNOUTS, MAILBOXES AND SUPPORTS, CATTLE GUARDS, ROADWAY SIGNING, EXISTING RIP-RAP OR OTHER PERMANENT EROSION CONTROL FEATURES, DIVERSIONARY BERMS, SWALES, DITCHES, AMOUNT AND CONFIGURATION OF DRIVEWAY FLARES AND DRIVEWAY CENTERLINE PROFILE, METAL BEAM GUARD FENCE AND END TREATMENTS, ETC. EXISTING DRIVEWAY CULVERTS AND SAFETY END TREATMENTS IF EFFECTED BY ROADWAY WIDENING WILL BE RECONSTRUCTED TO PRESERVE EXISTING FRONT SLOPE RATES. THE COORDINATION OF ITEMS THAT EFFECT EXISTING PRIVATE PROPERTY ACCESS, MAIL DELIVERY, ETC. IS THE RESPONSIBILITY OF THE DEVELOPER. THE WRITTEN CONCURRENCE OF ANY EFFECTED PROPERTY OWNERS FOR CONSTRUCTION EFFECTING THEIR DRIVEWAYS OR MAILBOX. TURNOUTS MUST BE OBTAINED AND PROVIDED TXDOT PRIOR TO TXDOT DRIVEWAY PERMITS BEING ISSUED.

2. FOR WORK IN STATE RIGHT OF WAY, THE DEVELOPER IS RESPONSIBLE FOR COORDINATION OF, OBTAINING PERMITS FOR, AND COMPLYING WITH ANY AND ALL STATE AND FEDERAL REGULATORY AGENCIES AND ALL APPLICABLE LAWS, RULES AND REGULATIONS PERTAINING TO THE REGULATION OF DRAINAGE, PRESERVATION OF CULTURAL RESOURCES, NATURAL RESOURCES AND THE ENVIRONMENT. THE DEVELOPER IS RESPONSIBLE FOR DETERMINING IF THE PROJECT IS IN AN ENVIRONMENTALLY SENSITIVE AREA SUCH AS WITHIN THE RECHARGE OR CONTRIBUTING ZONE OF PROTECTED AQUIFERS, AND ACT IN ACCORDANCE WITH ALL RESOURCE AGENCY REGULATIONS.

   a. IF TXDOT HAS A CZP OR WPAP ON FILE WITH TCEQ, THE DEVELOPER IS RESPONSIBLE FOR A ENDING TXDOT'S PER IT, OBTAINING TCEQ APPROVAL AND PROVIDING TXDOT WITH THE APPROVED AMENDED PERMIT. THE A ENDED PER IT WILL ADDRESS THE RELOCATION OF TXDOT PERMANENT BMP'S INCLUDING VEGETATIVE FILTER STRIPS THAT MAY BE IMPACTED BY WORK DONE WITHIN TXDOT.
   b. IF TXDOT DOES NOT HAVE A CZP OR WPAP ON FILE WITH TCEQ, ANY PERMANENT BMP'S INCLUDING VEGETATIVE FILTER STRIPS, THAT MAY BE REQUIRED IN ORDER TO TREAT ADDITIONAL IMPERVIOUS COVER PLACED IN TXDOT ROW WILL BE LOCATED IN PRIVATE PROPERTY AND THE DEVELOPER WILL PROVIDE TXDOT WITH EVIDENCE OF TCEQ APPROVAL OF THE ADDITIONAL IMPERVIOUS COVER."
   c. THE DEVELOPER MAY NOT OPERATE UNDER RESOURCE AGENCY ENVIRONMENTAL CLEARANCE OF A PREVIOUS OR ONGOING TXDOT PROJECT, BUT WILL BE REQUIRED TO OBTAIN SEPARATE RESOURCE/ENVIRONMENTAL AGENCY CLEARANCE.

3. IF WASTE AREAS OR MATERIAL SOURCE AREAS RESULT FROM THIS PROJECT, THE CONTRACTOR IS REMINDED TO FOLLOW SUPERSEDES ALL OTHER SPECIFICATIONS IN THE PLANS THE REQUIREMENTS OF THE TEXAS AGGREGATE QUARRY AND PIT SAFETY ACT. IN ADDITION, IT IS REQUESTED THAT THESE AREAS NOT BE VISIBLE FROM ANY HIGHWAY ON THE STATE SYSTEM.

   a. ANY MATERIALS REMOVED AND NOT REUSED AND DETERMINED TO BE SALVAGEABLE SHALL BE STORED WITHIN THE PROJECT LIMITS AT AN APPROVED LOCATION OR DELIVERED UNDAMAGED TO THE STORAGE YARD AS DIRECTED. PROPERLY DISPOSE UNSALVAGEABLE MATERIALS IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. DEFACE TRAFFIC SIGNS SO THAT THEY WILL NOT REAPPEAR IN PUBLIC AS SIGNS.

4. ANY TREES EXISTING WITHIN STATE RIGHT OF WAY ARE THE NATURAL RESOURCES OF THE STATE AND WILL BE PROTECTED. IN THE EVENT THAT TREES MUST BE REMOVED, TXDOT WRITTEN PERMISSION WILL BE RECEIVED IN ADVANCE AND WILL IDENTIFY THE SPECIFIC TREES BY SPECIES, DIAMETER AND LOCATION TO BE REMOVED. THE DEVELOPER WILL BE FINED FOR ANY UNPERMITTED REMOVAL OF TREES.

   a. IN THE EVENT THAT THERE ARE AREAS OF PUBLIC ROW DEDICATION RESULTING FROM THE PLATTING PROCESS, THE AREA WITHIN THE PUBLIC ROW DEDICATION DOES NOT PASS INTO TXDOT OWNERSHIP AS A RESULT OF PLATTING. HOWEVER, THE DEVELOPER WILL REMOVE ANY OLD FENCING, GATES AND UNSIGHTLY VEGETATION WITHIN THE AREA OF THE ROW DEDICATION, LEAVING IT IN AN AESTHETICALLY PLEASING CONDITION THE AREA OF ROW DEDICATION WILL NOT BE MOWED OR OTHERWISE MAINTAINED BY TXDOT. PRIOR TO REMOVAL OF TREES IN THE AREA OF ROW DEDICATION, THE TREES WILL FIRST BE EVALUATED IN ACCORDANCE WITH THE REQUIREMENTS OF LOCAL TREE PROTECTION ORDINANCES AND THE WRITTEN CONCURRENCE OF THE LOCAL JURISDICTION WILL BE PROVIDED TO TXDOT.

5. THE DEVELOPER WILL MAINTAIN AT THE PROJECT SITE, AND MAKE AVAILABLE UPON REQUEST, COPIES OF ALL APPROVED JOINT ENVIRONMENTAL PLANS AND PERMITS RELATING TO WORK IN STATE RIGHT OF WAY.

6. PRIOR TO BEGINNING GRADING ACTIVITY, THE CONTRACTOR WILL SET AND MAINTAIN ROADWAY STATIONING, CONTROL POINTS, MARKS, STAKES TO ESTABLISH LINES, SLOPES, GRADES AND CENTERLINES.

7. ANY SLOPES IN STATE RIGHT OF WAY WHICH BECOME STEEPER THAN 3;1 AS A RESULT OF THE WORK WILL BE TREATED WITH 4” THICK REINFORCED CONCRETE RIP-RAP AND BE TREATED WITH METAL BEAM GUARD FENCE. THIS MAY ENTAIL ADDITIONAL RIP-RAP BEYOND THAT SHOWN IN THE PLANS.

   a. UNLESS OTHERWISE SHOWN ON THE PLANS, WHERE EXISTING CONCRETE RIP-RAP IS REMOVED, MODIFIED OR EXTENDED, THE PORTION TO BE REMOVED WILL BE NEATLY SAW-CUT PRIOR TO REMOVAL AND THE NEW RIP-RAP WILL BE FORMED TO MATCH THE EXISTING LINES AND GRADES OF THE EXISTING RIP-RAP AND WILL BE DOWELED INTO THE EXISTING RIP-RAP WITH #3 BARS ON 12"CENTERS. THE DOWEL BARS WILL BE EPOXIED IN PLACE WITH EPOXY MEETING TXDOT REQUIREMENTS. THE MINIMUM EMBEDMENT LENGTH IS 9 INCHES. THIS APPLIES TO ANY TYPE OF CONCRETE RIP-RAP INCLUDING METAL BEAM GUARD FENCE OR CABLE BARRIER MOW STRIPS.

8. DUANE HOFFERICHTER (830) 609-0707 IN NEW BRAUNFELS, TRAVIS YOUNG (830) 303-0130 IN SEGUIN, CHAD LUX (830) 816-2430 IN BOERNE, MARK ANDREWS (830) 393-3144 IN FLORESVILLE, TXDOT MAINTENANCE OFFICE WILL BE CONTACTED BY THE CONTRACTOR 48 HOURS PRIOR TO WORK OCCURRING IN STATE RIGHT OF WAY.

9. STATE RIGHT OF WAY WILL NOT BE USED AS AN AREA FOR CONTRACTOR PARKING OR FOR STAGING THE RECEIPT OF MATERIALS OR EQUIPMENT.

10. TRAFFIC CONTROL AND CONSTRUCTION BARRICADES WILL MEET THE REQUIREMENTS OF THE TEXAS MUTCD.

11. THE CONTRACTOR WILL PROVIDE ADVANCE NOTIFICATION TO THE ENGINEER OF IMPENDING/UPCOMING LANE CLOSURES FOR ALL TEMPORARY AND/OR PERMANENT LANE, RAMP, CONNECTOR, FRONTAGE, SHOULDER, MEDIAN CROSSOVER, ETC. CLOSURES OR DETOURS.

12. ACCESS TO ADJOINING PROPERTY MUST BE MAINTAINED AT ALL TIMES.

13. UNLESS OTHERWISE NOTED IN THE PLANS AND/OR AS DIRECTED BY THE AREA ENGINEER OR MAINTENANCE SUPERVISOR, DAILY LANE CLOSURES SHALL BE LIMITED ACCORDING TO THE FOLLOWING RESTRICTIONS:

   a. NIGHTTIME: MAINTENANCE SUPERVISOR AND/OR AREA ENGINEER APPROVAL REQUIRED. (WITH UNIFORMED OFF DUTY LAW ENFORCEMENT OFFICERS)
   b. WEEKEND CLOSURES: MAINTENANCE SUPERVISOR AND/OR AREA ENGINEER APPROVAL REQUIRED.

14. NO LANE CLOSURES OR ROADWAY CLOSURES WILL BE PERMITTED FOR THE FOLLOWING KEY DATES AND/OR SPECIAL EVENTS:

   a. BETWEEN DECEMBER 15 AND JANUARY 1.
   b. WEDNESDAY BEFORE THANKSGIVING THRU THE SUNDAY AFTER THANKSGIVING
   c. SATURDAY AND SUNDAY BEFORE MEMORIAL DAY AND LABOR DAY
   d. SATURDAY OR SUNDAY WHEN JULY 4 FALLS ON A FRIDAY OR MONDAY.

15. AT NO TIME WILL THE ROADWAY TRAVEL WAY BE BLOCKED.

16. LANE CLOSURES WILL ONLY BE PERMITTED WITH 48 HOUR PRIOR APPROVAL OF THE TXDOT MAINTENANCE SUPERVISOR LANE CLOSURES WILL BE PERMITTED ONLY BETWEEN 9: 00 A.M. AND 4: 00 P.M. MONDAY THROUGH FRIDAY.

   a. FOR LANE CLOSURES ON TWO-LANE TWO-WAY ROADWAYS, INCLUDING DURING PILOT CAR OPERATIONS, FLAGGERS WILL BE PLACED AT THE BEGINNING AND END OF THE WORK ZONE AS WELL AS AT EACH INDIVIDUAL DRIVEWAY AND SIDE ROAD INTERSECTION WITHIN THE LIMITS OF THE WORK ZONE AND EXTENDING FOR A MINIMUM OF THE BEGINNING OF ADVANCED WARNING SIGNS EITHER END OF THE WORK ZONE TO CONTROL, WARN AND DIRECT SIDE ROAD AND DRIVEWAY TRAFFIC OF THE CHANGE IN TRAFFIC OPERATIONS. WHENEVER ONE WAY TRAFFIC CONTROL IS ACCOMPLISHED BY TRAFFIC SIGNALS WORK ZONE FLAGGERS WILL BE SIMILARLY STATIONED AT EACH INDIVIDUAL DRIVEWAY AND SIDE ROAD INTERSECTION WITHIN THE LIMITS OF THE WORK ZONE AND EXTENDING FOR A MINIMUM OF THE BEGINNING OF THE ADVANCED WARNING SIGNS EITHER END OF THE WORK ZONE. ALL FLAGGERS WILL BE IN CONSTANT RADIO CONTACT.

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PARK HOUSE UNIT 1

TXDOT GENERAL NOTES

DATE 08/07/2025
PROJECT NO. 04154-000
DRAWN BY SG/JVA
CHECKED BY JL/AC

REVISIONS 1. 2. 3. 4. 5. 6. 7. 8.

CUDE ENGINEERS TBPELS No. 10048500

C8.G8

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REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

17. A MINIMUM 3:1(H:V) TEMPORARY SAFETY SLOPE OF STABLE COMPACTED MATERIAL WILL BE REQUIRED ADJACENT TO THE STATE HIGHWAY EDGE OF PAVEMENT AT ALL TIMES DURING NON-WORKING HOURS.

18. ONLY ONE SIDE OF THE ROADWAY WILL BE OPEN TO CONSTRUCTION AT A TIME. WORK WILL BE COMPLETED, AND PAVEMENT EDGES BACKFILLED ON ONE SIDE OF THE ROAD BEFORE WORK WILL BEGIN ON THE OPPOSITE SIDE OF THE ROADWAY.

19. ALL MILLING, PAVING AND SEAL COAT OPERATIONS SHALL PROCEED IN THE DIRECTION OF TRAFFIC.

20. ANY PAVEMENT EDGE DROP-OFFS BETWEEN 1 AND 2 INCHES IN HEIGHT WILL HAVE CW 8-11 WARNING SIGNS. ANY PAVEMENT EDGE DROP-OFF 2 INCHES OR GREATER WILL HAVE A 3:1 COMPACTED SAFETY SLOPE AND CW 8-9A OR CW 8-11 SIGNS PLUS CHANNELIZING DEVICES. PAVEMENT EDGES WILL BE SHOULDERED UP WITH COMPACTED EMBANKMENT MATERIAL AND 4 INCHES OF TOPSOIL AS SOON AS POSSIBLE AFTER PAVING IS COMPLETED ON THE SIDE OF THE ROAD BEING WIDENED.

21. PROOF ROLLING OF SUBGRADE IS REQUIRED AND SHALL BE WITNESSED BY TXDOT PRIOR TO PLACEMENT OF PAVEMENT STRUCTURE UNLESS OTHERWISE APPROVED BY THE TXDOT MAINTENANCE SUPERVISOR. THE REQUIREMENT FOR PROOF-ROLLING OF SUBGRADE IS NOT SUPERSEDED BY ANY OTHER REQUIREMENTS INCLUDING THOSE OF ANY GEOTECHNICAL REPORT.

22. ALL FLEXIBLE BASE WILL HAVE A MINIMUM PLASTICITY INDEX OF 4.

23. ALL COURSES OF ASPHALTIC CONCRETE PAVEMENT (REGARDLESS OF TYPE) WILL BE PLACED WITH AN ASPHALT PAVING EQUIPMENT MEETING THE REQUIREMENTS OF TXDOT ITEM 320, "EQUIPMENT FOR ASPHALT CONCRETE PAVEMENT", UNLESS OTHERWISE APPROVED BY THE MAINTENANCE SUPERVISOR.
    a. TACK COAT WILL BE APPLIED WITH AN ASPHALT DISTRIBUTOR AND SPREAD ACROSS THE SURFACE RECEIVING THE TACK COAT BY MULTIPLE PASSES OF A PNEUMATIC ROLLER. THE APPLICATION OF TACK COAT AND THE NUMBER OF PASSES OF THE PNEUMATIC ROLLER WILL BE SUFFICIENT TO MAKE THE SURFACE AND EXPOSED EDGES CONSISTENTLY BLACK WITH NO AREAS DEVOID OF TACK. ASPHALT FOR TACK COAT SHALL MEET TXDOT SPECS AND BE FROM A TXDOT APPROVED SOURCE.

24. ALL SURFACE AGGREGATES WILL MEET THE REQUIREMENTS OF TXDOT FRICTION CLASSIFICATION "B" AND WILL MEET PG BINDER GRADE 70-22.

25. ALL SURFACE ASPHALT CONCRETE PAVEMENT WILL BE UNDER-SEALED WITH A ONE COURSE SURFACE TREATMENT.

26. ALL ASPHALTIC CONCRETE PAVEMENT USED IN BASE COURSES WILL BE TYPE “A” OR “B” AND WILL MEET PG BINDER GRADE 64-22.

27. ALL PAVEMENT WIDENING INCLUDING SHOULDERS WILL MATCH THE EXISTING PAVEMENT CROSS SLOPE.

28. ALL PAVEMENT MARKINGS WILL BE TYPE I THERMOPLASTIC (100MIL) WILL UNDER-SEAL MEETING THE REQUIREMENTS OF TXDOT ITEM 666, REFLECTORIZED PAVEMENT MARKINGS. THE CONTRACTOR WILL PLACE GUIDE MARKS IN ACCORDANCE WITH ITEM 666 AND WILL MAKE ARRANGEMENTS FOR TXDOT INSPECTION OF THE PAVEMENT MARKING LAYOUT PRIOR TO PLACEMENT OF STRIPING. EQUIPMENT USED FOR THE PLACEMENT OF STRIPING WILL MEET THE PRODUCTION REQUIREMENTS OF ITEM 666 UNLESS OTHERWISE APPROVED IN ADVANCE BY THE TXDOT MAINTENANCE SUPERVISOR.

29. EXISTING PAVEMENT MARKINGS THAT CONFLICT WITH PROPOSED PAVEMENT MARKINGS WILL BE LIGHTLY GROUND IN A MANNER THAT DOES NOT DAMAGE THE PAVEMENT SURFACE, TO REMOVE ANY PAVEMENT MARKING ACCUMULATION, AND WILL BE COVERED WITH A STRIP SEAL OF 18” MINIMUM WIDTH, CONSISTING OF PRECOATED GRADE 5, FRICTION CLASS B AGGREGATE.

30. ALL MATERIALS AND CONSTRUCTION METHODS USED IN STATE RIGHT OF WAY WILL MEET TXDOT SPECIFICATIONS. THIS SUPERSEDES ALL OTHER SPECIFICATIONS IN THE PLANS.

31. ALL TURN LANE CONCRETE PAVEMENT IN STATE ROW WILL MEET THE REQUIREMENTS OF TXDOT ITEM 360 CONCRETE AND WILL BE BATCHED AT CONCRETE PLANTS HAVING A CURRENT APPROVED MIX DESIGN. CLASS P CONCRETE SHALL HAVE 7 AND 28 DAY COMPRESSIVE STRENGTH OF 3200 PSI AND 4400 PSI RESPECTIVELY.

32. WHEN WIDENING EXISTING CONCRETE PAVEMENTS, JOINTS IN THE NEW PAVEMENT WILL MATCH JOINTS IN EXISTING PAVEMENT AND CURB.

33. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT TXDOT APPROVED MATERIALS, MIX DESIGNS, APPROVED SOURCES AND PRODUCTS ARE USED FOR ALL WORK IN STATE ROW. THE CONTRACTOR WILL ARRANGE FOR THE SERVICES OF A QUALIFIED TESTING LABORATORY FOR ALL ITEMS REQUIRING TESTING AND WILL NOTIFY TXDOT OF ANY DISCREPANCIES BETWEEN TEST RESULTS AND TXDOT SPECS IN A TIMELY MANNER. THE CONTRACTOR WILL PROVIDE TO TXDOT INVOICES AND TESTING RESULTS AS SOON THEY ARE AVAILABLE. FAILURE TO DO THIS WILL RESULT IN REJECTION OF THE WORK.

34. SAWING OF CONTRACTION/CONSTRUCTION JOINTS IN CONCRETE PAVEMENT WILL BE ACCOMPLISHED AS SOON AS PERSONNEL CAN WALK ON THE CONCRETE WITHOUT DAMAGING THE SURFACE REGARDLESS OF TIME OF DAY OR WEATHER CONDITIONS. STAND-BY POWER DRIVEN CONCRETE SAWS WILL BE PROVIDED DURING THE SAWING OPERATION. CURING COMPOUND WILL BE RE-APPLIED TO THE SAWED JOINT IMMEDIATELY UPON SAWING THE JOINT.

35. GUARDRAIL SET'S WILL BE TYPE 3 UNLESS OTHERWISE APPROVED BY THE TXDOT MAINTENANCE SUPERVISOR. GUARDRAIL MOWSTRIP PLACED ADJACENT TO OTHER CONCRETE RIP-RAP WILL BE SEPARATED BY A FORMED CONSTRUCTION JOINT.

36. ANY CONCRETE CURB TO BE REMOVED WILL BE SAW-CUT AT THE LIMITS OF REMOVAL AND BE REMOVED ENTIRELY. SLICING THE TOP PORTION OF THE CURB OFF AND LEAVING REMAINING PORTION OF CURB IN PLACE IS UNACCEPTABLE.

37. ANY DAMAGE TO TXDOT FACILITIES WILL BE REPAIRED AT NO EXPENSE TO THE STATE, TO TXDOT'S SATISFACTION.

38. SIDEWALKS PLACED IN THE HIGHWAY RIGHT-OF-WAY WILL BE A MINIMUM WIDTH OF FIVE FEET OR COMPLY WITH THE MORE STRINGENT WIDTH AS REQUIRED BY CITY ORDINANCE AND WILL MEET ALL OTHER REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT. PEDESTRIAN RAMPS WILL BE PROVIDED AT STREET AND DRIVEWAY INTERSECTIONS AS SHOWN ON THE CURRENT STATE STANDARD FOR PEDESTRIAN FACILITIES. COLOR CONTRAST AND TEXTURING OF PEDESTRIAN RAMPS WILL BE PLACE AT STREET INTERSECTION RAMPS ONLY AS SHOWN ON THE CURRENT STATE STANDARD FOR PEDESTRIAN FACILITIES. PEDESTRIAN RAMPS AT DRIVEWAY INTERSECTIONS WILL NOT RECEIVE ANY COLOR CONTRAST OR TEXTURING. METAL PLATING FOR SIDEWALK BRIDGES WILL MATCH THE TYPICAL WIDTH OF THE APPROACH SIDEWALK. TIS MAY RESULT IN A WIDTH THAT IS GREATER THAN SHOWN IN THE STANDARD DETAILS INCLUDED IN THE PLANS.

39. THE CONTRACTOR WILL USE BEST MANAGEMENT PRACTICES (BMP'S) TO MINIMIZE EROSION AND SEDIMENTATION IN THE STATE RIGHT OF WAY RESULTING FROM THE PROPOSED CONSTRUCTION. RE-VEGETATION OF DISTURBED AREAS WILL BE COMPLETED IN ACCORDANCE WITH TXDOT STANDARD SPECIFICATIONS. PERMANENT VEGETATIVE COVER MUST ACHIEVE 70% COVERAGE PRIOR TO PROJECT ACCEPTANCE. SOIL RETENTION BLANKETS MAY BE REQUIRED TO PREVENT EROSION OF TOPSOIL PRIOR TO VEGETATION RE-ESTABLISHMENT.

40. PRIOR TO SEEDING OR RE-VEGETATION THE FRONT SLOPES WILL BE SHOULDERED UP WITH TOPSOIL TO ELIMINATE ANY PAVEMENT EDGE DROP-OFF.

41. MUD TRACKED ONTO THE ROADWAY FROM THE SITE WILL BE IMMEDIATELY REMOVED TO THE SATISFACTION OF TXDOT.

42. IT WILL BE THE DEVELOPER/OWNER'S RESPONSIBILITY TO CLEAN OUT, TO THE STATE'S SATISFACTION, ANY DRAINAGE STRUCTURE OR STORM SEWER SYSTEM THAT BECOMES SILTED AS A RESULT OF THEIR OPERATIONS.

43. THE ADJUSTMENT OF ANY UTILITIES IN STATE RIGHT OF WAY OR ADJACENT PRIVATE EASEMENT WILL BE THE RESPONSIBILITY OF THE DEVELOPER/OWNER.

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PARK HOUSE UNIT 1

TXDOT GENERAL NOTES

DATE 08/07/2025

PROJECT NO. 04154-000

DRAWN BY SG/JVA

CHECKED BY JL/AC

REVISIONS 1 2 3 4 5 6 7 8

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TBPELS No. 10048500

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REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

44. THE CONTRACTOR IS RESPONSIBLE FOR PLACING AND MAINTAINING EXISTING SIGNS ON TXDOT APPROVED TEMPORARY MOUNTS UNTIL PERMANENT SIGNS ARE PLACED.

45. THE FINAL PLACEMENT OF PERMANENT SIGNS WILL BE COORDINATED PRIOR TO PLACEMENT WITH THE LOCAL TXDOT MAINTENANCE SUPERVISOR.

46. FOR WORK WITHIN THE STATE RIGHT OF WAY WHERE REMOVAL OF MATERIALS OR DEBRIS WITHIN THE CONSTRUCTION LIMITS AND NOT INCORPORATED IN THE FINISHED ROADWAY SECTION OF RIGHT OF WAY, WILL BE DISPOSED OF IN A MANNER ACCEPTABLE TO THE MAINTENANCE SUPERVISOR AT NO EXPENSE TO THE STATE. MATERIALS THAT ARE NOT DETERMINED TO BE SALVAGEABLE BY THE MAINTENANCE SUPERVISOR BECOME THE PROPERTY OF THE CONTRACTOR FOR PROPER DISPOSAL AT THEIR EXPENSE. MATERIALS DETERMINED TO BE SALVAGEABLE WILL BE RETURNED TO THE STATE AND DELIVERED TO THE LOCATION AS DETERMINED BY THE MAINTENANCE SUPERVISOR.

47. REGARDLESS OF ERRORS AND OMISSIONS IN INFORMATION PROVIDED IN THE PLANS OR CROSS-SECTIONS THE PERMITEE IS RESPONSIBLE FOR PROVIDING FOR POSITIVE DRAINAGE OUTFALLS WITHIN AND OFF THE LIMITS OF THE PROJECT.

    a. KEEP THE SIGNALS IN OPERATION AT ALL TIMES EXCEPT WHEN NECESSARY FOR SPECIFIC INSTALLATION OPERATIONS, INCLUDING ANY MODIFICATIONS TO EXISTING SIGNAL HEADS TO MAINTAIN CLEAR VISIBILITY AT ALL TIMES. WHEN IT IS NECESSARY FOR A SIGNAL TO BE TURNED OFF, HIRE OFF DUTY POLICE OFFICERS TO CONTROL THE TRAFFIC UNTIL THE SIGNALS ARE BACK IN SATISFACTORY CONDITION.

48. (FOR WORK IN CITY OF NEW BRAUNFLES) ALL TRAFFIC SIGNALS ON THE STATE HIGHWAY SYSTEM WITHIN THE NEW BRAUNFELS CITY LIMITS, WITH THE EXPECTION OF SIGNALS ON IH 35, ARE THE RESPONSIBILITY OF THE CITY OF NEW BRAUNFELS AND THE CITY OF NEW BRAUNFELS WILL PERFORM CONSTRUCTION INSPECTION. CONTACT GARRY FORD, P.E. AT (830) 221-4645, 48 HOURS PRIOR TO THE NEED FOR ANY INSPECTIONS. ALSO WHEN NON-TRAFFIC SIGNAL WORK IS BEING PERFORMED WITHIN 400 FEET OF AN EXISTING SIGNALIZED INTERSECTION, FLASHING BEACON OR SCHOOL ZONE FLASHER OR OTHER TYPE OF SIGNAL; IF WITHIN THE CITY OF NEW BRAUNFELS AREA OF RESPONSIBILITY CONTACT GARRY FORD, P.E. TO DETERMINE/VERIFY THE LOCATION OF LOOP DETECTORS, CONDUIT, GROUND-BOXES, ETC. FOR ALL OTHER LOCATIONS, CONTACT TXDOT REPRESENTATIVE, MIKE GARZA, AT (210) 615-6028, E-MAIL IS MIKE.GARZA@TXDOT.GOV. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY SIGNAL EQUIPMENT DAMAGED BY CONSTRUCTION OPERATIONS. THE METHOD OF REPAIR OR REPLACEMENT SHALL BE PRE-APPROVED AND INSPECTED. DEPENDING ON THE TYPE AND EXTENT OF THE DAMAGE, THE ENGINEER RESERVES THE RIGHT TO PERFORM THE REPAIR OR REPLACEMENT WORK AND THE CONTRACTOR WILL BE BILLED FOR THIS WORK. WHEN WORKING NEAR AERIAL ELECTRICAL LINES OR UTILITY POLES, COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS.

49. (FOR AREAS OTHER THAN CITY OF NEW BRAUNFELS) WHEN NON- TRAFFIC SIGNAL WORK IS BEING PERFORMED WITHIN 400 FEET OF AN EXISTING SIGNALIZED INTERSECTION, FLASHING BEACON OR SCHOOL ZONE FLASHER OR OTHER TYPE OF SIGNAL, CONTACT TXDOT REPRESENTATIVE, MIKE GARZA, AT (210) 615-6028, E-MAIL IS MIKE.GARZA@TXDOT.GOV. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY SIGNAL EQUIPMENT DAMAGED BY CONSTRUCTION OPERATIONS. THE METHOD OF REPAIR OR REPLACEMENT SHALL BE PRE-APPROVED AND INSPECTED. DEPENDING ON THE ON THE TYPE AND EXTENT OF THE DAMAGE, TXDOT RESERVE THE RIGHT TO PERFORM THE REPAIR OR REPLACEMENT WORK AND THE CONTRACTOR WILL BE BILLED FOR THIS WORK WHEN WORKING NEAR AERIAL ELECTRICAL LINES OR UTILITY POLES, COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS.

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PARK HOUSE UNIT 1

TXDOT GENERAL NOTES

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

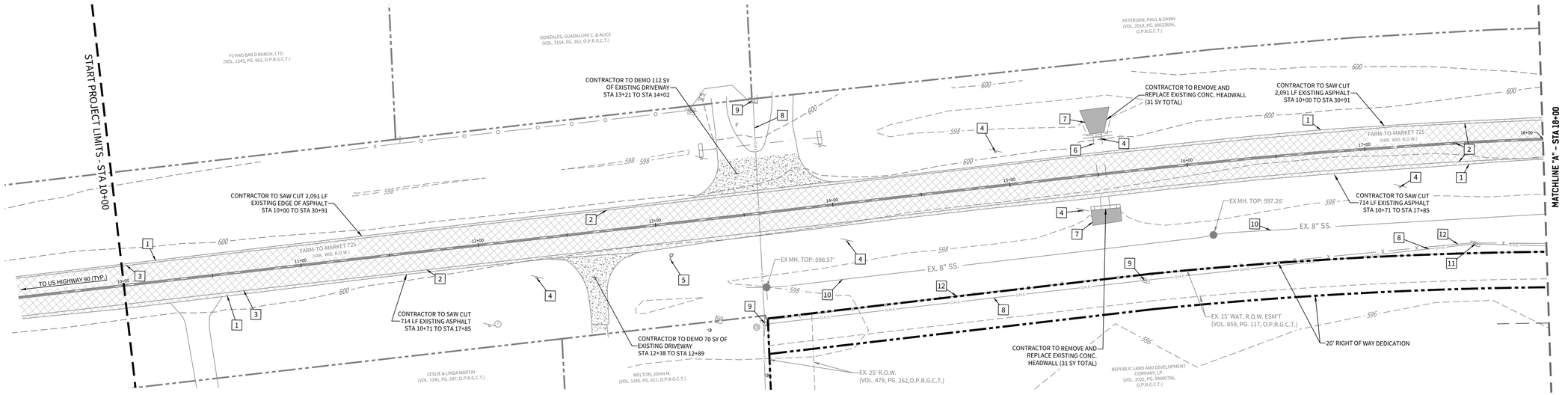
CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

CUDE ENGINEERS
TBPELS No. 10048500

C8.G10

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



SCALE: 1"=30'

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NOTES:

1. ALL PAVEMENT MARKINGS AND STRIPING SHALL BE HOT APPLIED THERMOPLASTIC PAVEMENT MARKINGS.
2. THE CONTRACTOR SHALL BE AWARE THAT EXISTING OVERHEAD AND UNDERGROUND ELECTRIC, AND SANITARY SEWER MAINS EXIST ALONG FM 725. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED, POTHOLED TO VERIFY DEPTH, AND COMPARE WITH THE GEOTECH REPORT PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.
3. CONTRACTOR TO COMPLY WITH ALL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) REGULATIONS, LATEST EDITION, AND ALL TXDOT REQUIREMENTS.
4. CONTRACTOR TO NOTIFY THE CITY OF SEGUIN AND TXDOT 24 HOURS PRIOR TO CONSTRUCTION COMMENCEMENT.
5. CONTRACTOR TO PROVIDE ALL NECESSARY TRAFFIC CONTROL DEVICES TO MAINTAIN TWO-WAY TRAFFIC AT ALL TIMES.
6. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITTING.
7. CONTRACTOR TO PERFORM CONSTRUCTION ONLY DURING THE WORKING HOURS SET BY THE CITY OF SEGUIN AND TxDOT.
8. CONTRACTOR IS RESPONSIBLE TO REVEGETATING ALL DISTURBED LIMITS OF THE EXISTING FM 725 RIGHT OF WAY UPON COMPLETION OF GRADING AND IMPROVEMENTS.
9. CONTRACTOR IS RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE AT ALL TIMES DURING CONSTRUCTION.
10. CONTRACTOR IS REQUIRED TO PROVIDE ACCESS TO ADJACENT PROPERTY AND HOMEOWNERS AT ALL TIMES.
11. CONTRACTOR IS RESPONSIBLE FOR RESTORING ALL DAMAGED OR REMOVED DRIVEWAYS AND FENCING TO EXISTING OR BETTER CONDITION.
12. CONTRACTOR IS RESPONSIBLE FOR SHORING POWER POLES IF AND AS NEEDED. N.S.P.I.

LEGEND:

- EXISTING ROW LINE
- PROPOSED ROW LINE
- EXISTING OVERHEAD ELECTRIC (O.H.E.)
- EXISTING WIRE FENCE
- EXISTING IRON FENCE
- EXISTING WATER VALVE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING TELECOM MANHOLE
- EXISTING TELECOM PEDESTAL
- EXISTING GUY WIRE
- EXISTING POWER POLE
- EXISTING SIGN
- EXISTING MAILBOX
- EXISTING PAVEMENT TO REMAIN
- EXISTING PAVEMENT OR DRIVEWAY TO BE REMOVED

KEYNOTES

1. EX. EDGE OF PAVEMENT
2. EX. STRIPING TO BE REMOVED
3. EX. STRIPING TO REMAIN
4. EX. SIGN TO BE RELOCATED SEE SHEET C8.S2
5. EX. MAILBOX TO BE RELOCATED C8.S2
6. EX. 30" C.M.P.
7. EX. CONCRETE HEADWALL TO BE REMOVED
8. EX. OVERHEAD ELECTRIC
9. EX. POWER POLE TO REMAIN
10. EX. 8" SANITARY SEWER MAIN
11. EX. POWER POLE TO BE RELOCATED SEE SHEET C8.S2
12. EX. FENCE TO BE REMOVED

CAUTION!!

THE CONTRACTOR SHALL BE AWARE THAT A SANITARY SEWER EXISTS ALONG FM 725, ALONG WITH EXISTING OVERHEAD AND UNDERGROUND ELECTRIC UTILITIES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

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PARK HOUSE UNIT 1

FM 725 EXISTING CONDITIONS & DEMOLITION PLAN

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

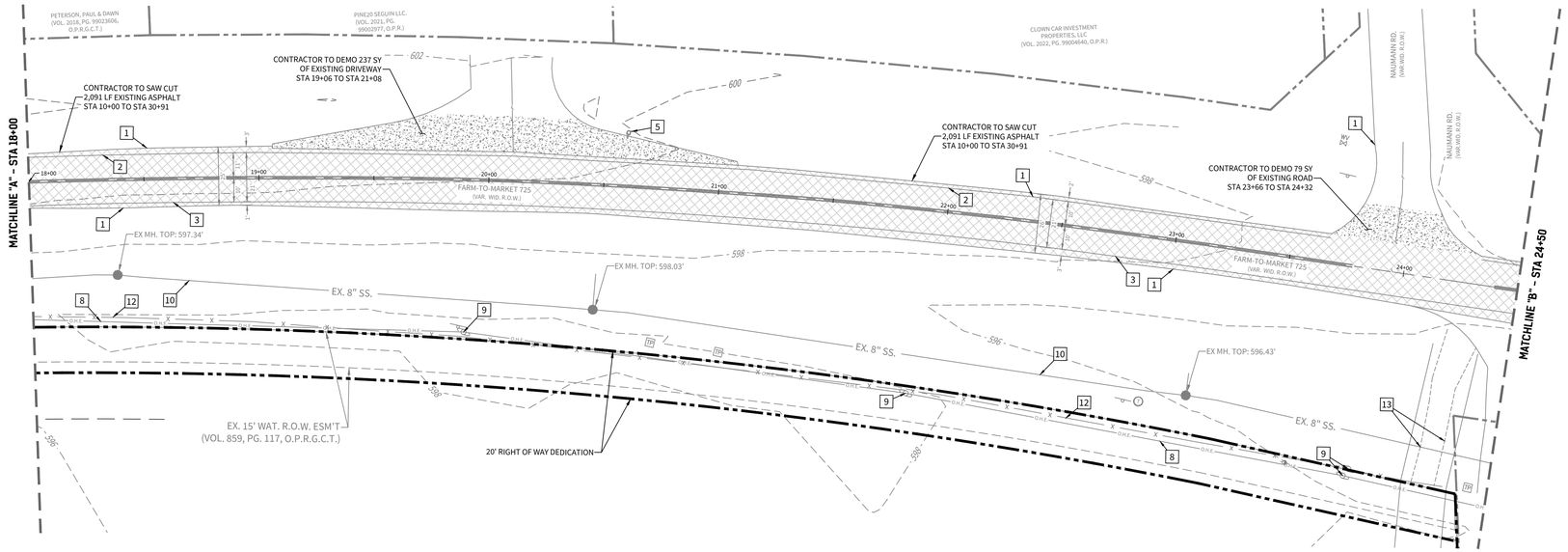
STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C8.EX1

© 04154-000 L:\2025\4 Files\Civil\C8.EX1 FM 725 EXISTING CONDITIONS & DEMOLITION PLAN.dwg 2025-08-07 9:33am sgonzales

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



NOTES:

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2. THE CONTRACTOR SHALL BE AWARE THAT EXISTING OVERHEAD AND UNDERGROUND ELECTRIC, AND SANITARY SEWER MAINS EXIST ALONG FM 725. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED, POTHOLED TO VERIFY DEPTH, AND COMPARE WITH THE GEOTECH REPORT PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.
3. CONTRACTOR TO COMPLY WITH ALL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) REGULATIONS, LATEST EDITION, AND ALL TXDOT REQUIREMENTS.
4. CONTRACTOR TO NOTIFY THE CITY OF SEGUIN AND TXDOT 24 HOURS PRIOR TO CONSTRUCTION COMMENCEMENT.
5. CONTRACTOR TO PROVIDE ALL NECESSARY TRAFFIC CONTROL DEVICES TO MAINTAIN TWO-WAY TRAFFIC AT ALL TIMES.
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8. CONTRACTOR IS RESPONSIBLE TO REVEGETATING ALL DISTURBED LIMITS OF THE EXISTING FM 725 RIGHT OF WAY UPON COMPLETION OF GRADING AND IMPROVEMENTS.
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- EXISTING TELECOM PEDESTAL
- EXISTING GUY WIRE
- EXISTING POWER POLE
- EXISTING SIGN
- EXISTING MAILBOX
- EXISTING PAVEMENT
- EXISTING PAVEMENT TO BE REMOVED

KEYNOTES

1. EX. EDGE OF PAVEMENT
2. EX. STRIPING TO BE REMOVED
3. EX. STRIPING TO REMAIN
4. EX. SIGN TO BE RELOCATED SEE SHEET C8.S2
5. EX. MAILBOX TO BE RELOCATED SEE SHEET C8.S2
6. EX. 30" C.M.P.
7. EX. CONCRETE HEADWALL TO BE REMOVED
8. EX. OVERHEAD ELECTRIC
9. EX. POWER POLE TO REMAIN
10. EX. 8" SANITARY SEWER MAIN
11. EX. POWER POLE TO BE RELOCATED SEE SHEET C8.S2
12. EX. FENCE TO BE REMOVED
13. EX. DIRT DRIVEWAY TO BE REMOVED

CAUTION!!
THE CONTRACTOR SHALL BE AWARE THAT A SANITARY SEWER EXISTS ALONG FM 725, ALONG WITH EXISTING OVERHEAD AND UNDERGROUND ELECTRIC UTILITIES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

SCALE: 1"=30'
0 30 60

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PARK HOUSE UNIT 1

FM 725 EXISTING CONDITIONS & DEMOLITION PLAN

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REVISIONS 1 2 3 4 5 6 7 8

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C8.EX2

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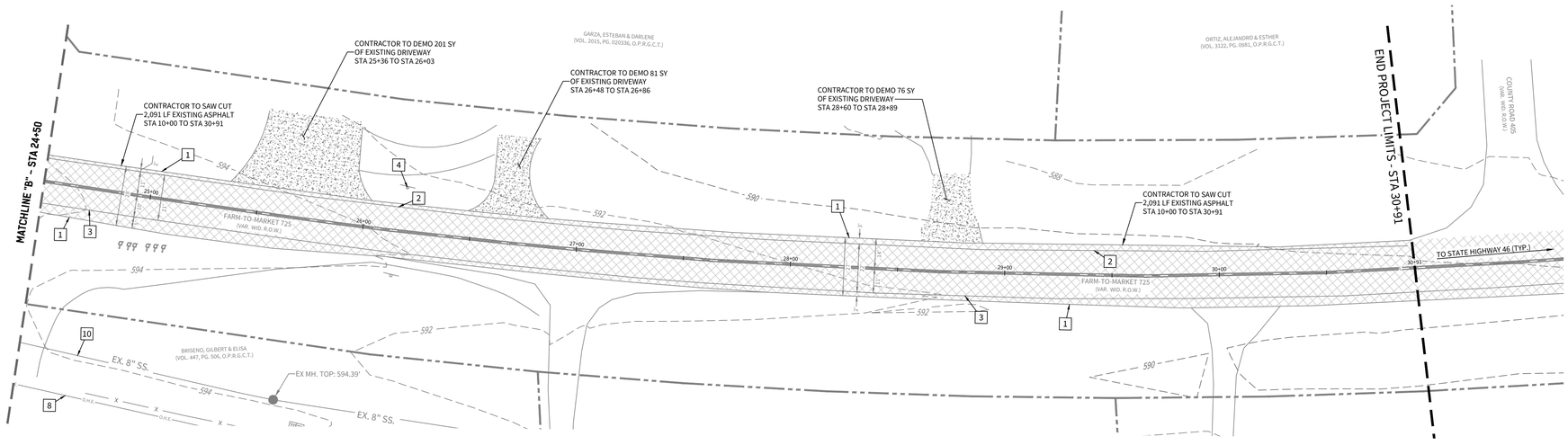
S:\04154\001\DWG\PLANSHEETS\03 EXISTING CONDITIONS AND DEMOLITION PLAN.dwg 2025/08/27 8:33am sgonzales



SCALE: 1"=30'

0 30 60

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LEGEND:

- EXISTING ROW LINE
- PROPOSED ROW LINE
- EXISTING OVERHEAD ELECTRIC (O.H.E.)
- EXISTING WIRE FENCE
- EXISTING IRON FENCE
- EXISTING WATER VALVE (WV)
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING TELECOM MANHOLE
- EXISTING TELECOM PEDESTAL (TP)
- EXISTING GUY WIRE
- EXISTING POWER POLE
- EXISTING SIGN
- EXISTING MAILBOX
- EXISTING PAVEMENT
- EXISTING PAVEMENT TO BE REMOVED

KEYNOTES

1. EX. EDGE OF PAVEMENT
2. EX. STRIPING TO BE REMOVED
3. EX. STRIPING TO REMAIN
4. EX. SIGN TO BE RELOCATED SEE SHEET C8.S2
5. EX. MAILBOX TO BE RELOCATED SEE SHEET C8.S2
6. EX. 30" C.M.P.
7. EX. CONCRETE HEADWALL TO BE REMOVED
8. EX. OVERHEAD ELECTRIC
9. EX. POWER POLE TO REMAIN
10. EX. 8" SANITARY SEWER MAIN
11. EX. POWER POLE TO BE RELOCATED SEE SHEET C8.S2
12. EX. FENCE TO BE REMOVED
13. EX. DIRT DRIVEWAY TO BE REMOVED

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PARK HOUSE UNIT 1

FM 725 EXISTING CONDITIONS & DEMOLITION PLAN

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1 2 3 4 5 6 7 8

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C8.EX3

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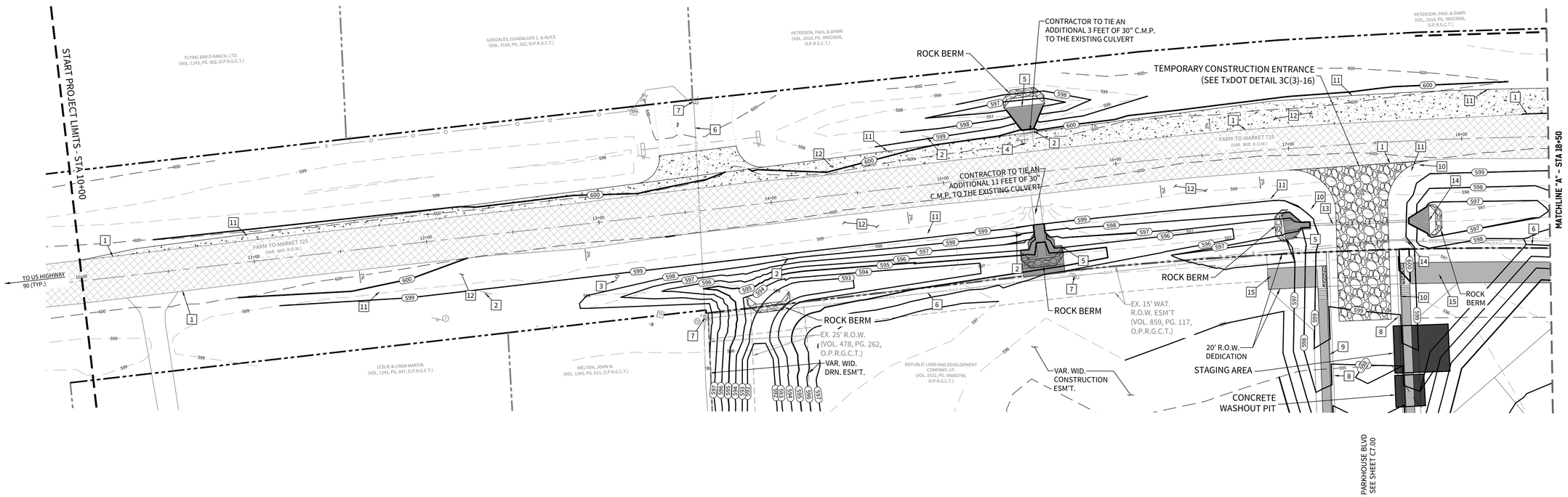

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- EXISTING GUY WIRE
- EXISTING POWER POLE
- EXISTING SIGN
- EXISTING MAILBOX
- EXISTING PAVEMENT TO REMAIN
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE RIP-RAP
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- ROCK BERM
- SILT FENCE
- STAGING AREA
- CONCRETE WASHOUT PIT

KEYNOTES

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2. PROP. RELOCATED SIGN
3. PROP. RELOCATED MAILBOX
4. EX. 30" C.M.P.
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8. PROP. GUTTER
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10. PROP. HEADER CURB
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13. PROP. 18" C.M.P.
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15. PROP. 10' CONCRETE TRAIL PATH

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PARK HOUSE UNIT 1

FM 725 STORMWATER POLLUTION PREVENTION PLAN

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS 1 2 3 4 5 6 7 8

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

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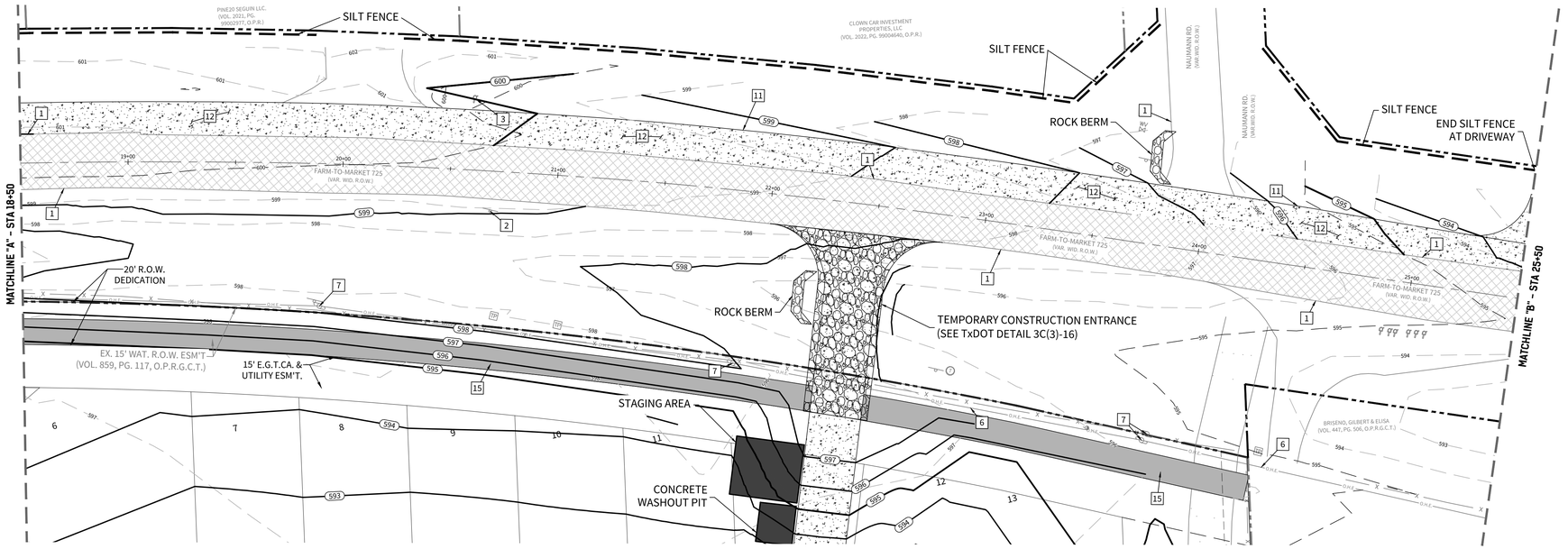

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PARK HOUSE UNIT 1

FM 725 STORMWATER POLLUTION PREVENTION PLAN

DATE 08/07/2025
PROJECT NO. 04154-000
DRAWN BY SG/JVA
CHECKED BY JL/AC

REVISIONS 1 2 3 4 5 6 7 8

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED PROFESSIONAL ENGINEER
08/29/25
CUDE ENGINEERS
TBPELS No. 10048500

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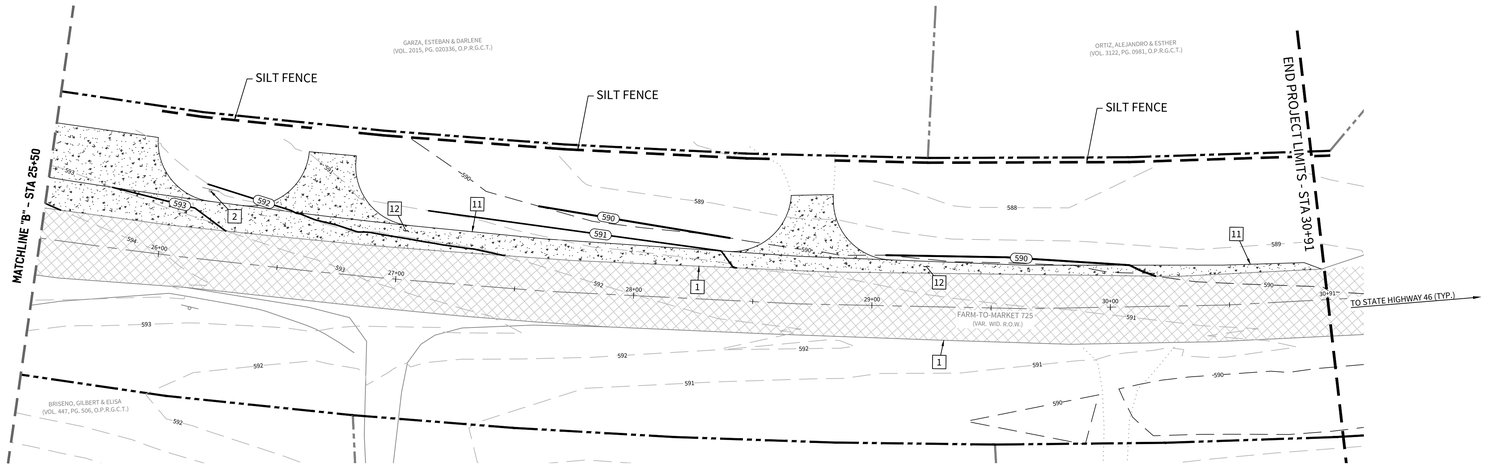

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KEYNOTES

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2	PROP. RELOCATED SIGN	9	PROP. CURB
3	PROP. RELOCATED MAILBOX	10	PROP. HEADER CURB
4	EX. 30" C.M.P.	11	PROP. EDGE OF PAVEMENT
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6	EX. OVERHEAD ELECTRIC	13	PROP. 18" C.M.P.
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PARK HOUSE UNIT 1

FM 725 STORMWATER POLLUTION PREVENTION PLAN

DATE
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PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS 1 2 3 4 5 6 7 8

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TBPELS No. 10048500

C8.EC3

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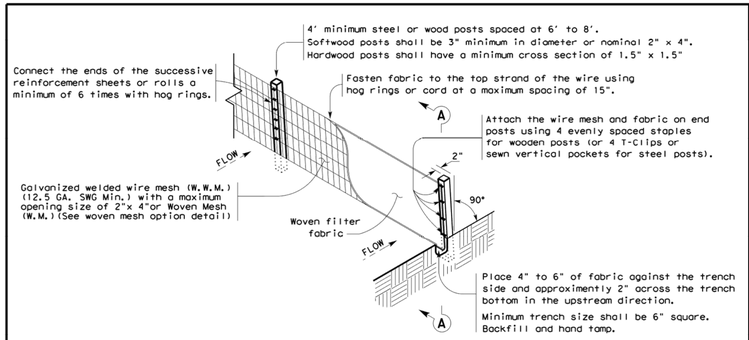
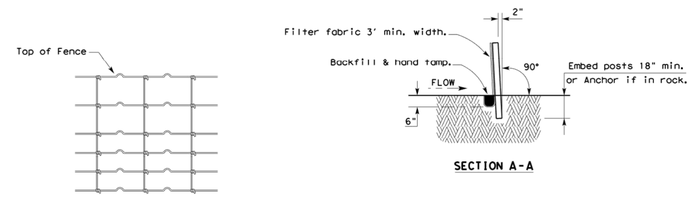


TEMPORARY SEDIMENT CONTROL FENCE

SCF



SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

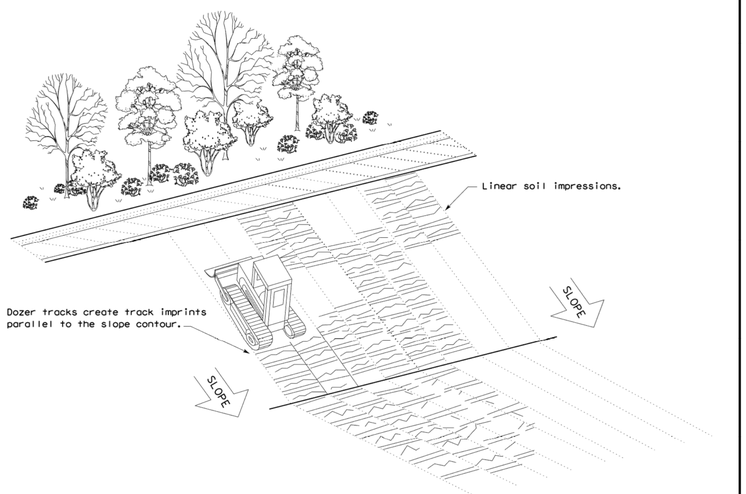
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
FENCE & VERTICAL TRACKING
EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	CK: LS	
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REVISIONS					
	DIST	COUNTY		SHEET NO.	

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FILE

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PARK HOUSE UNIT 1

TXDOT EROSION CONTROL DETAILS

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SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

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C8.EC4

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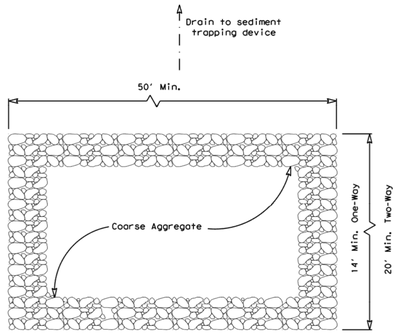
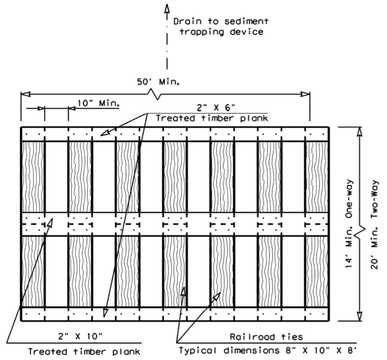
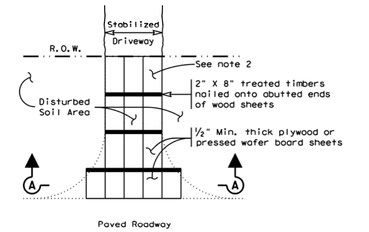


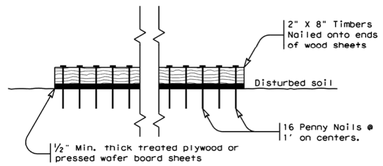
PLAN VIEW



PLAN VIEW



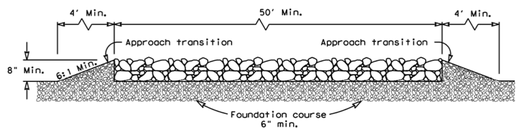
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

SHORT TERM



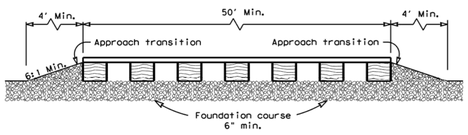
ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-16

FILE: ec316	DN: TxDOT		CK: KM	DW: VP	DW/CK: LS
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	DIST		COUNTY		SHEET NO.
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PARK HOUSE UNIT 1

TXDOT EROSION CONTROL DETAILS

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

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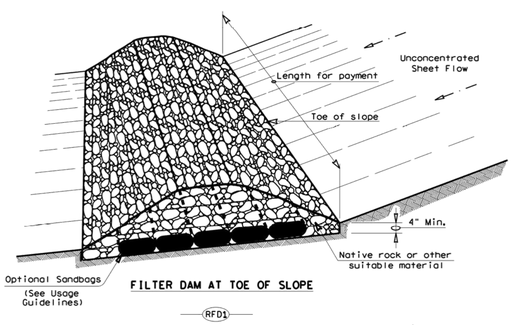
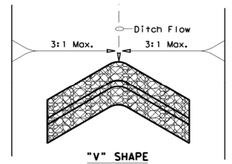
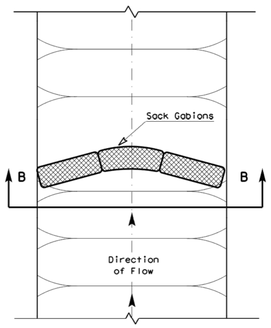


FILTER DAM AT TOE OF SLOPE

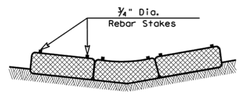
RFD1



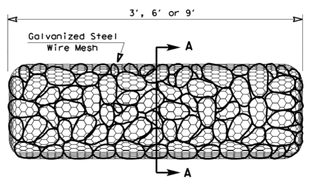
"V" SHAPE
PLAN VIEW



PLAN VIEW

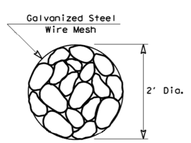


SECTION B-B

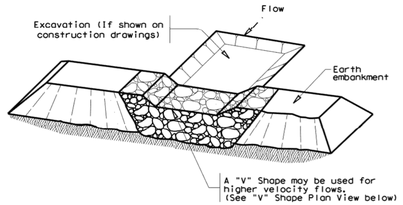


TYPE 4 (SACK GABIONS)

RFD4

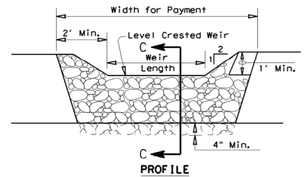


SECTION A-A

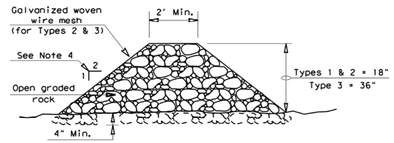


FILTER DAM AT SEDIMENT TRAP

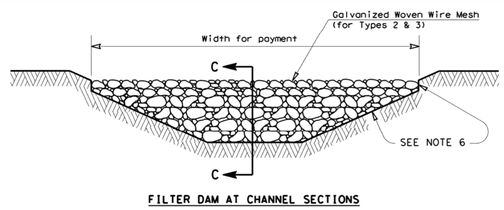
RFD1 OR RFD2



PROFILE



SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" × 3 ¼"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam — RFD1
Type 2 Rock Filter Dam — RFD2
Type 3 Rock Filter Dam — RFD3
Type 4 Rock Filter Dam — RFD4

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	CK: LS
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	DIST	COUNTY		SHEET NO.

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PARK HOUSE UNIT 1

TXDOT EROSION CONTROL DETAILS

DATE
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PROJECT NO.
04154-000

DRAWN BY
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I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

Texas Pollutant Discharge Elimination System (TPDES) TXR 150000: Stormwater Discharge Permit or Construction General Permit (CGP) required for projects with 1 or more acres distrubed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

☒ No Action Required ☐ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000.
2. Comply with the Storm Water Pollution Prevention Plan (SW3P) and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and Texas Commission on Environmental Quality (TCEQ), Environmental Protection Agency (EPA) or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, Contractor shall submit Notice of Intent (NOI) to TCEQ and the Engineer.
5. NOI required: ☐Yes ☐No

Note: If amount of soil disturbance changes, permit requirements may change.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

US Army Corps of Engineers (USACE) Permit required for filling, dredging, excavating or other work in any potential USACE jurisdictional water, such as, rivers, creeks, streams, or wetlands.

The Contractor shall adhere to all of the terms and conditions associated with the following permit(s):

☒ No Permit Required
☐ Nationwide Permit (NWP) 14 - Pre-construction Notice (PCN) not Required
☐ Nationwide Permit 14 - PCN Required
☐ Individual 404 Permit Required
☐ Other Nationwide Permit Required: NWP# _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices (BMPs) planned to control erosion, sedimentation and post-project total suspended solids (TSS).

1.

2.

3.

4.

401 Best Management Practices: (Not applicable if no USACE permit)

Erosion	Sedimentation	Post-Construction TSS
☐ Temporary Vegetation	☒ Silt Fence	☐ Vegetative Filter Strips
☐ Blankets/Matting	☒ Rock Berm	☐ Retention/Irrigation Systems
☐ Mulch	☐ Triangular Filter Dike	☐ Extended Detention Basin
☐ Sodding	☒ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost
☐ Erosion Control Compost	☐ Erosion Control Compost	☐ Mulch Filter Berm and Socks
☐ Mulch Filter Berm and Socks	☐ Mulch Filter Berm and Socks	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☐ Vegetation Lined Ditches
	☐ Stone Outlet Sediment Traps	☐ Sand Filter Systems
	☐ Sediment Basins	☐ Sedimentation Chambers
		☐ Grassy Swales

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical. Contractor must adhere to Construction Specification Requirements Specs 162,164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS.

☒ No Action Required ☒ Required Action

Action No.

1. MIGRATORY BIRD NESTS: Schedule construction activities as needed to meet the following requirements:

   A. Do not remove or destroy any active migratory bird nests (nests containing eggs and/or flightless birds) at any time of year. If there are any active nests, they shall not be removed until the nests become inactive.

   B. On/in structures, if there are any active nests, they shall not be removed until all nests become inactive. After inactive nests are removed and/or before nest activity begins, deterrent materials may be applied to the structures to prevent future nest building.

2. See Item 5 in General Notes.
3.
4.

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediated area, and contact the Engineer immediately.

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropiate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the follwing are detected:
- Dead or distressed vegetation (not identified as normal)
- Trash piles, drums, canister, barrels, etc.
- Undesirable smells or odors
- Evidence of leaching or seepage of substances

Hazardous Materials or Contamination Issues Specific to this Project:

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Does the project involve the demolition of a span bridge?
☐ Yes ☒ No (No further action required)

If "Yes", a pre- demolition notification must be submitted to the Texas Department of State Health Services. The contractor shall contact TxDOT's Project Engineer 25 calendar days prior to the demolition of the bridges(s) on the project to assist with the notification.

VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Texas Department of Transportation
San Antonio District Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic_2015-10-09_SAT.dgn	DN: TxDOT	CK: TxDOT	DW: BW	CK: GAC	
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PARK HOUSE UNIT 1

TXDOT EROSION CONTROL DETAILS

DATE 01/08/2025

PROJECT NO. 04154-000

DRAWN BY SG/JVA

CHECKED BY JL/AC

REVISIONS 1. 2. 3. 4. 5. 6. 7. 8.

CUDE ENGINEERS TBPELS No. 10048500

C8.EC7

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Note To Designer:
1. Do not alter Sheet Design or Font style, size or weight - match text attributes.
2. If additional space is needed for a numbered section, fence and adjust sections up or down as needed for proportioning and readability but do not relocate from it's relative position.

A. GENERAL SITE DATA

1. PROJECT LIMITS: *Same as stated on the Title Sheet*

2. PROJECT SITE MAPS:
- *Project Latitude _____ Project Longitude_____*
- *Project Location Map: Shown on Title Sheet*
- *Drainage Patterns: Shown on Drainage Area Maps (Sheets X-Y)*
- *Approx. Slopes Anticipated After Major Gradings and Areas of Soil Disturbance: Shown on Typical Sections (Sheets X-Y)*
- *Major Controls and Locations of Stabilization Practices: Shown on SW3P Sheets (Sheets X-Y)*
- *Project Specific Locations: Off-site waste, borrow, or storage areas are not part of this SW3P.*
- *Surface Waters and Discharge Locations: Shown on Drainage and Culvert Layout Sheets (Sheets X-Y)*

3. PROJECT DESCRIPTION: *Same description as stated on Title Sheet*

- *Joint-bid utilities are covered by this SW3P (Sheets X-Y)*
  Non-Joint Bid Utilities are not part of this SW3P.

4. FOR MAJOR SOIL DISTURBING ACTIVITIES SEQUENCE OF EVENTS:

1. *Install controls down-slope of work area and initiate inspection and maintenance activities.*
2. *Begin phased construction with interim stabilization practices. Adjust erosion and sedimentation controls during construction to meet requirements and changing conditions and as directed/approved by the Engineer.*
3. *Major soil disturbing activities may include but are not limited to: right-of-way preparation, cut and/or fill to improve roadway profile, final grading and placement of topsoil and the following (if marked):*

___ *Placement of road base*
___ *Extensive ditch grading*
___ *Upgrading or replacing culverts or bridges*
___ *Temporary detour road(s)*
___ *Other: _____*

5. EXISTING AND PROPOSED CONDITIONS:

Description of existing vegetative cover: (Provide type and description of vegetative cover)
Percentage of existing vegetative cover: (Provide percentage)
Existing vegetative cover: (mark one) ___ *Thick or uniformly established* ___ *Thin and Patchy* ___ *None or minimal cover*
Description of soils: (Provide classification and description of soils)
Site Acreage: _____ Acreage disturbed: _____
Site runoff coefficient (pre-construction): _____ Site runoff coefficient (post-construction): _____

6. RECEIVING WATERS: *(Mark all that apply)*

___ *A classified stream does not pass through project.*
___ *A classified stream passes through project. Name _____ Segment Number _____*
Name of receiving waters that will receive discharges from disturbed areas of the project: _____

Site is in a Municipal Separate Storm Sewer System (MS4).
MS4 Operator (name): _____

B. BEST MANAGEMENT PRACTICES

General timing or sequence for implementation of BMPs shall be as required and/or as directed/approved by the Engineer to provide adequate controls. BMPs shown on plan sheets are to be considered "proposed" unless/until install date is shown. BMPs are to reduce sediments from road construction activities.

1. SOIL STABILIZATION PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

___ SEEDING
___ MULCHING (Hay or Straw)
___ BUFFER ZONES
___ PLANTING
___ COMPOST/MULCH FILTER BERM
___ SODDING
___ PRESERVATION OF NATURAL RESOURCES
___ FLEXIBLE CHANNEL LINER
___ RIGID CHANNEL LINER
___ SOIL RETENTION BLANKET
___ COMPOST MANUFACTURED TOPSOIL
___ OTHER: (Specify Practice)

2. STRUCTURAL PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

___ SILT FENCES
___ HAY BALES
___ ROCK FILTER DAMS
___ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
___ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
___ DIVERSION DIKE AND SWALE COMBINATIONS
___ PIPE SLOPE DRAINS
___ PAVED FLUMES
___ ROCK BEDDING AT CONSTRUCTION EXIT
___ TIMBER MATTING AT CONSTRUCTION EXIT
___ CHANNEL LINERS
___ SEDIMENT TRAPS
___ SEDIMENT BASINS
___ STORM INLET SEDIMENT TRAP
___ STONE OUTLET STRUCTURES
___ CURBS AND GUTTERS
___ STORM SEWERS
___ VELOCITY CONTROL DEVICES
___ OTHER: *(Specify Practice)*

3. STORM WATER MANAGEMENT:

The proposed facility was designed in consideration of hydraulic design standards to convey stormwater in a manner that is protective of public safety and property. The control of erosion from the facility is inherent to the design. Additional factors affecting post-construction stormwater at the project location include: (mark all that apply)

___ *Existing or new vegetation provides natural filtration.*
___ *The design includes provisions for permanent erosion controls provided by strategically placed pervious and impervious surfaces.*
___ *Project includes permanent sedimentation controls (other than grass).*
___ *Velocities do not require dissipation devices.*
___ *Velocity-dissipation devices included in the design.*
___ *Other : _____*

4. NON-STORM WATER DISCHARGES:

Off-site discharges are prohibited except as follows:

1. *Discharges from fire fighting activities and/or fire hydrant flushings.*
2. *Vehicle, external building, and pavement wash water where detergents and soaps are not used and where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed).*
3. *Plain water used to control dust.*
4. *Plain water originating from potable water sources.*
5. *Uncontaminated groundwater, spring water or accumulated stormwater.*
6. *Foundation or footing drains where flows are not contaminated with process materials such as solvents.*
7. *Other: _____*

Concrete truck wash water discharges on the site should be prohibited or minimized. If allowed by the Engineer, they must be managed in a manner so as not to contaminate surface water. They must not be located in areas of concentrated flow. Concrete truck wash-out locations must be shown on the SW3P Layout and included in the inspections.

Hazardous material spill/leak shall be prevented or minimized. At a minimum, this includes asphalt products, fuels, oils, lubricants, solvents, paints, acids, concrete curing compounds and chemical additives for soil stabilization. BMPs shall be implemented to the storage areas of these products. All spills must be cleaned and disposed properly and reported to the Engineer. Report any release at or above the reportable quantity during a 24 hour period to the National Response Center at 1-800-424-8802.

C. OTHER REQUIREMENTS & PRACTICES

1. MAINTENANCE:
All erosion and sediment controls shall be maintained in good working order. If a repair is necessary, it shall be performed before the next anticipated storm event but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from equipment. If maintenance prior to the next anticipated storm event is impracticable, maintenance must be scheduled and accomplished as soon as practicable. Disturbed areas on which construction activities have ceased, temporarily or permanently, shall be stabilized within 14 calendar days unless they are scheduled to and do resume within 21 calendar days. The areas adjacent to creeks and drainageways shall have priority followed by protecting storm sewer inlets.

2. INSPECTION:
For areas of the construction site that have not been finally stabilized, areas used for storage of materials, structural control measures, and locations where vehicles enter or exit the site, personnel provided by the permittee and familiar with the SW3P must inspect disturbed areas at least once every seven (7) calendar days. An inspection and Maintenance Report shall be prepared for each inspection and the controls shall be revised on the SW3P within seven (7) calendar days following the inspection.

3. WASTE MATERIALS:
All non-hazardous municipal waste materials such as litter, rubbish, trash and garbage located on or originating from the project shall be collected and stored in a securely lidded metal dumpster, provided by the Contractor. The dumpster shall be emptied as necessary or as required by local regulation and the trash shall be hauled to a permitted disposal facility. The burying of non-hazardous municipal waste on the project shall not be permitted. Construction material waste sites, stockpiles and haul roads shall be constructed to minimize and control the amount of sediment that may enter receiving waters. Construction material waste sites shall not be located in any wetland, water body or stream bed. Construction staging areas and vehicle maintenance areas shall be constructed in a manner to minimize the runoff of pollutants.

4. OFFSITE VEHICLE TRACKING:
Off-site vehicle tracking of sediments and the generation of dust must be minimized. Excess sediments on road shall be removed on a regular basis as directed/approved by the Engineer.

5. OTHER:
See the EPIC sheet for additional environmental information.

Design Consultant Logo here - delete block if not applicable

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STORM WATER POLLUTION PREVENTION PLAN (SW3P)

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6			
STATE	DISTRICT	COUNTY	
TEXAS	SAT		
CONTROL	SECTION	JOB	SHEET NO.

_____, P.E.
Signature of Registrant & Date

REVISION DATE: 10/12

CUDEENGINEERS.COM

CUDE ENGINEERS

1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE UNIT 1

TXDOT EROSION CONTROL DETAILS

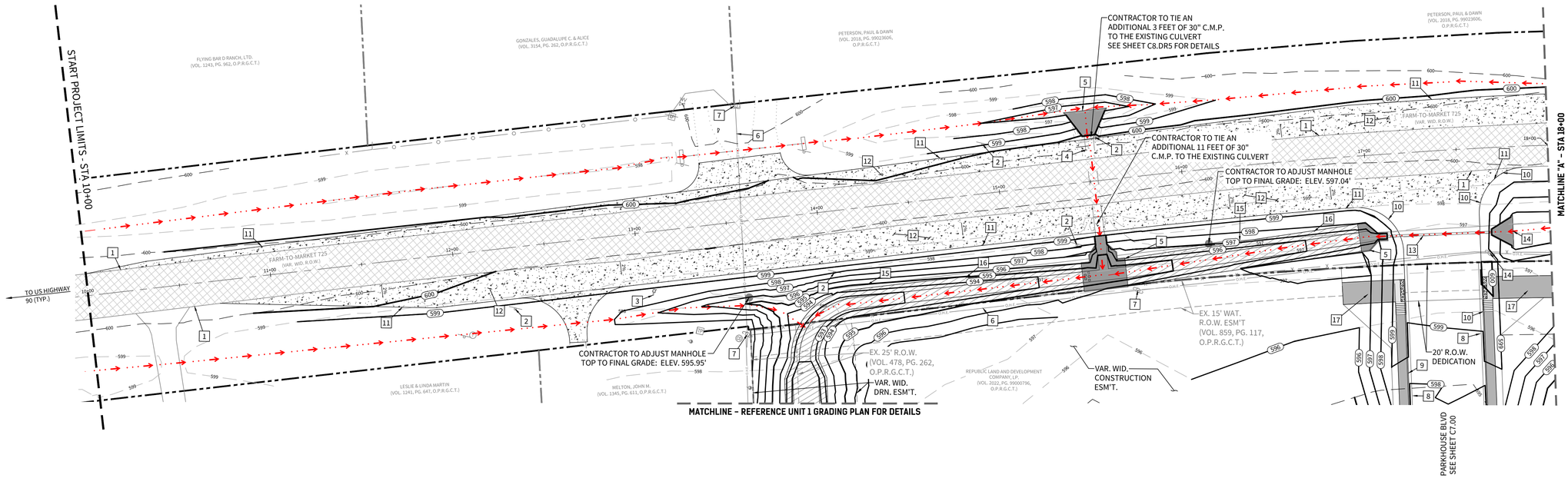
DATE 01/08/2025
PROJECT NO. 04154-000
DRAWN BY SG/JVA
CHECKED BY JL/AC

REVISIONS 1 2 3 4 5 6 7 8

CUDE ENGINEERS
TBPELS No. 10048500

C8.EC8

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



SCALE: 1"=30'

0 30 60

NOTES:

1. ALL PAVEMENT MARKINGS AND STRIPING SHALL BE HOT APPLIED THERMOPLASTIC PAVEMENT MARKINGS.
2. THE CONTRACTOR SHALL BE AWARE THAT EXISTING OVERHEAD AND UNDERGROUND ELECTRIC, AND SANITARY SEWER MAINS EXIST ALONG FM 725. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED, POTHOLED TO VERIFY DEPTH, AND COMPARE WITH THE GEOTECH REPORT PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.
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LEGEND:

- EXISTING ROW LINE
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- EXISTING POWER POLE
- EXISTING SIGN
- EXISTING MAILBOX
- EXISTING PAVEMENT TO REMAIN
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE RIP-RAP
- PROPOSED EARTHEN CHANNEL

KEYNOTES

1. EX. EDGE OF PAVEMENT
2. PROP. RELOCATED SIGN
3. PROP. RELOCATED MAILBOX
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San Marcos, Texas 78666
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PARK HOUSE UNIT 1

FM 725 GRADING PLAN

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS 1 2 3 4 5 6 7 8

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10004500

C8.DR1

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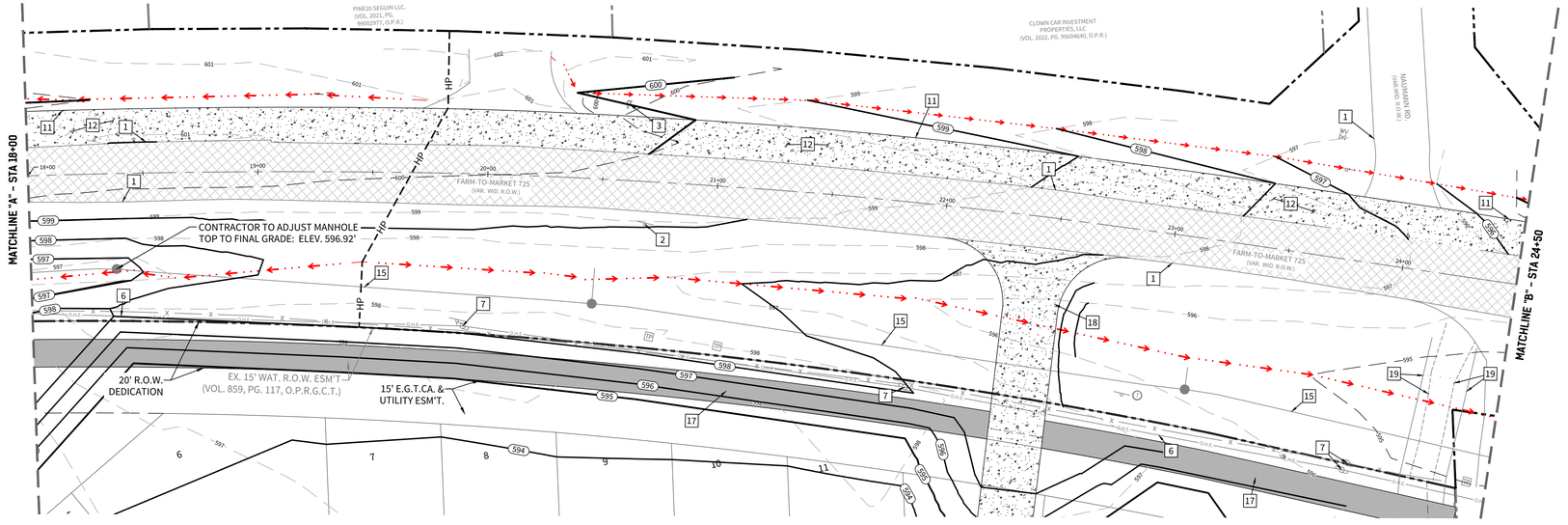

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PARK HOUSE UNIT 1

FM 725 GRADING PLAN

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS 1 2 3 4 5 6 7 8

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C8.DR2

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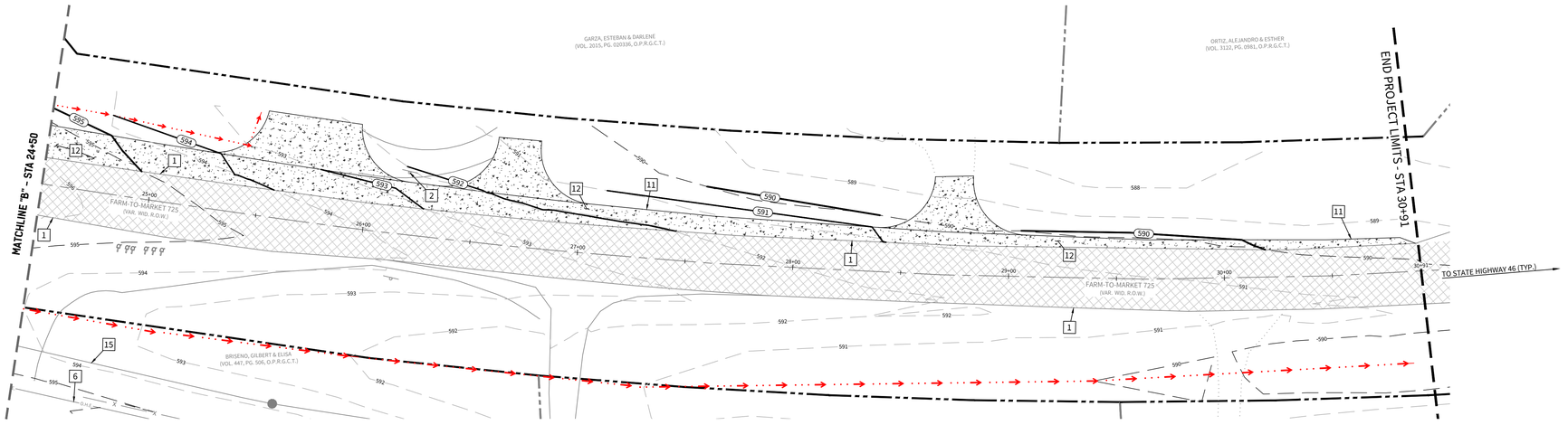

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SCALE: 1"=30'
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PARK HOUSE UNIT 1

FM 725 GRADING PLAN

DATE
08/07/2025
PROJECT NO.
04154-000
DRAWN BY
SG/JVA
CHECKED BY
JL/AC

REVISIONS 1 2 3 4 5 6 7 8

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C8.DR3

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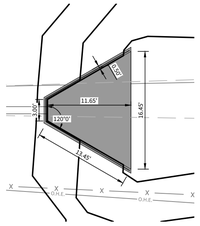
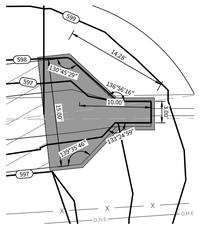
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



ENTRANCE CULVERT UPSTREAM HEADWALL DETAIL

(SCALE 1" = 10')



ENTRANCE CULVERT DOWNSTREAM HEADWALL DETAIL

(SCALE 1" = 10')

LEGEND:

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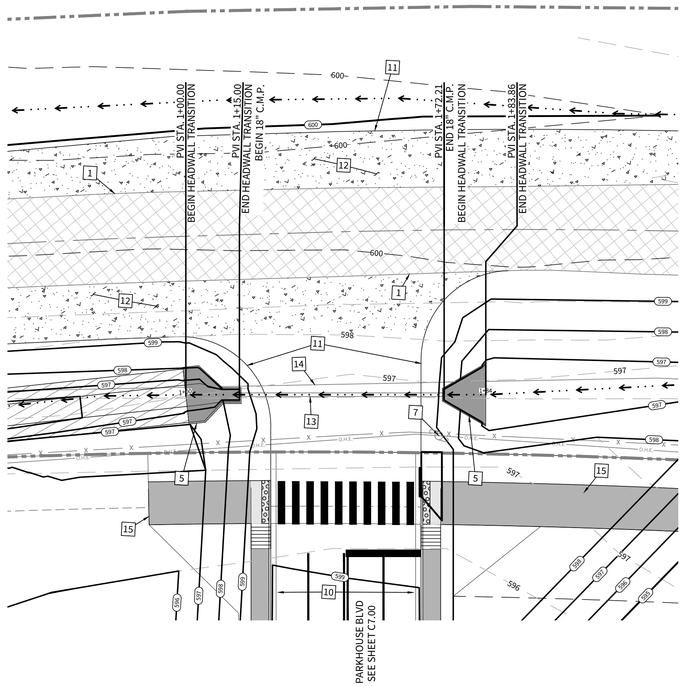
PROPOSED ROW LINE	EXISTING SANITARY SEWER CLEANOUT
EXISTING OVERHEAD ELECTRIC	EXISTING TELECOM MANHOLE
EXISTING WIRE FENCE	EXISTING TELECOM PEDESTAL
EXISTING IRON FENCE	EXISTING GUY WIRE
EXISTING PAVEMENT	EXISTING POWER POLE
PROPOSED PAVEMENT	EXISTING SIGN
PROPOSED CONCRETE RIP-RAP	EXISTING MAILBOX

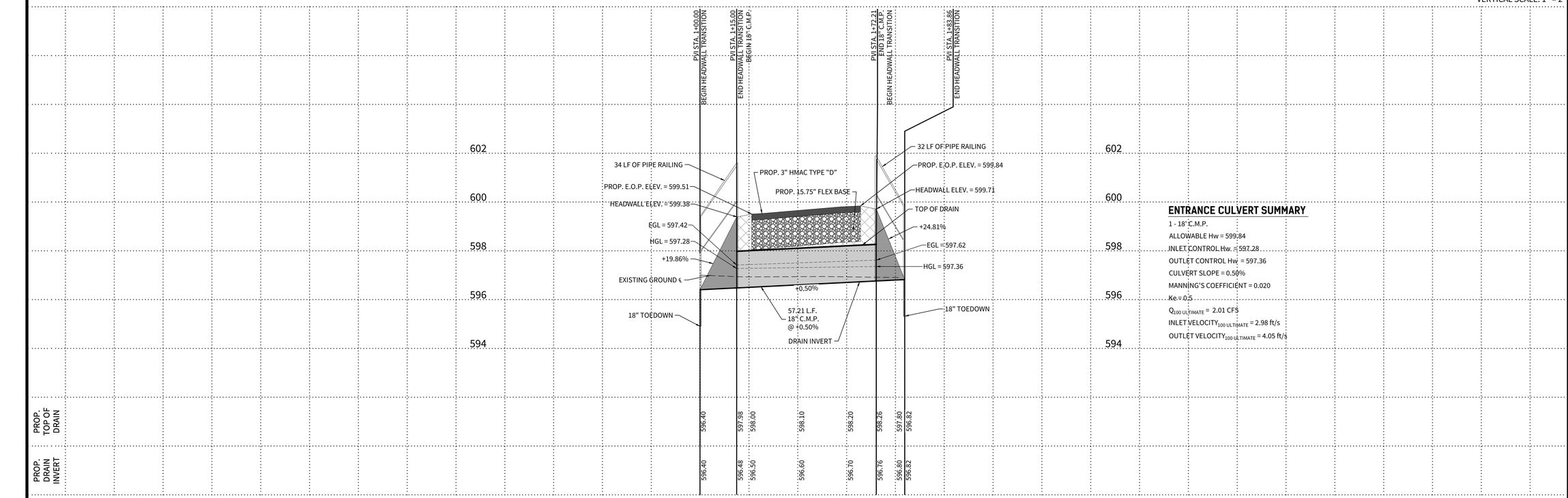
NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF SEGUIN AND TXDOT. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.



ENTRANCE CULVERT

STA. 1+00.00 TO STA. 1+83.86



ENTRANCE CULVERT SUMMARY

1 - 18" C.M.P.
ALLOWABLE Hw = 599.84
INLET CONTROL Hw = 597.28
OUTLET CONTROL Hw = 597.36
CULVERT SLOPE = 0.50%
MANNING'S COEFFICIENT = 0.020
Ke = 0.5
$Q_{100\ ULTIMATE}$ = 2.01 CFS
INLET VELOCITY$_{100\ ULTIMATE}$ = 2.98 ft/s
OUTLET VELOCITY$_{100\ ULTIMATE}$ = 4.05 ft/s

KEYNOTES

1	EX. EDGE OF PAVEMENT	8	PROP. GUTTER
2	PROP. RELOCATED SIGN	9	PROP. CURB
3	PROP. RELOCATED MAILBOX	10	PROP. HEADER CURB
4	EX. 30" C.M.P.	11	PROP. EDGE OF PAVEMENT
5	PROP.CONC. HEADWALL	12	PROP. PAVEMENT WIDENING
6	EX. OVERHEAD ELECTRIC	13	PROP. 18" C.M.P.
7	EX. POWER POLE	14	EX. 8" SAN. SEWER
		15	PROP. 10' CONCRETE TRAIL PATH

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

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CUDE ENGINEERS

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PARK HOUSE UNIT 1

FM 725 CULVERTS PLAN & PROFILES

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
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TBPELS No. 10048500

C8.DR4

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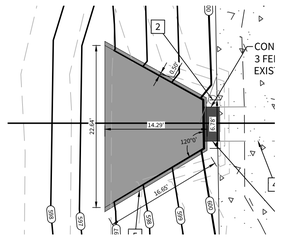
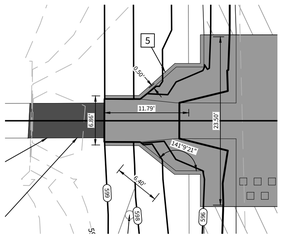


EX. 30" C.M.P.
UPSTREAM HEADWALL DETAIL
(SCALE 1" = 10')



EX. 30" C.M.P.
DOWNSTREAM HEADWALL DETAIL
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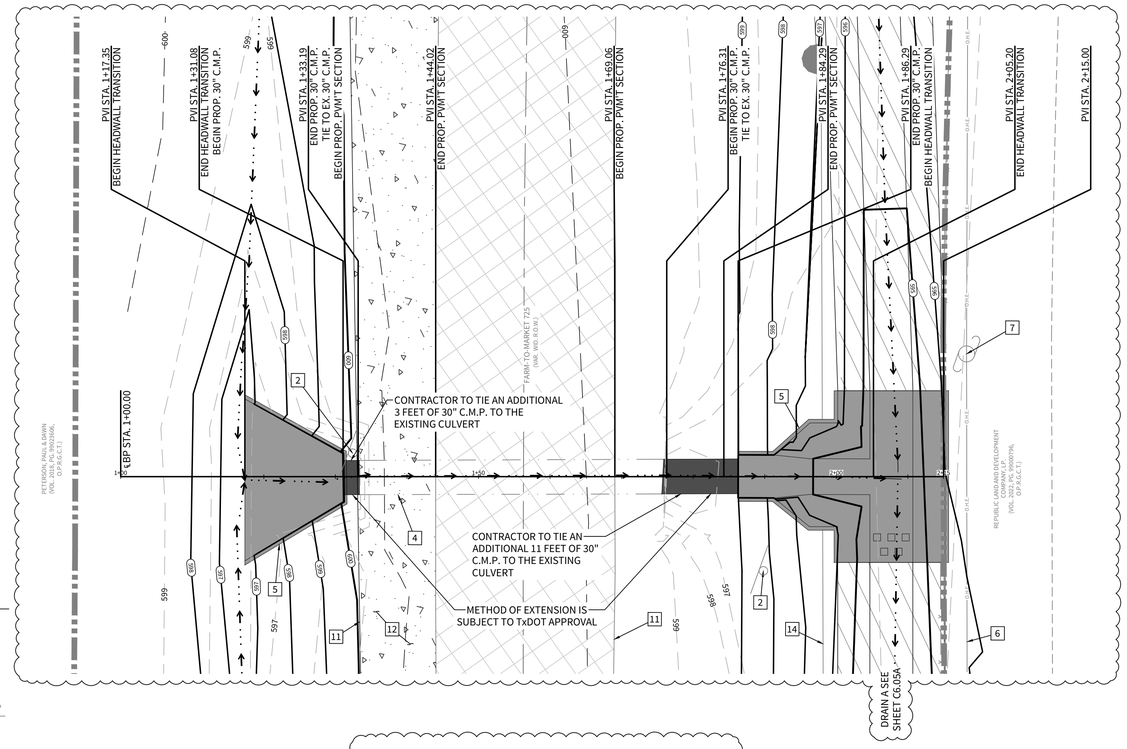
NOTES:

1. **ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.**
2. **85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF SEGUIN AND TXDOT. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.**



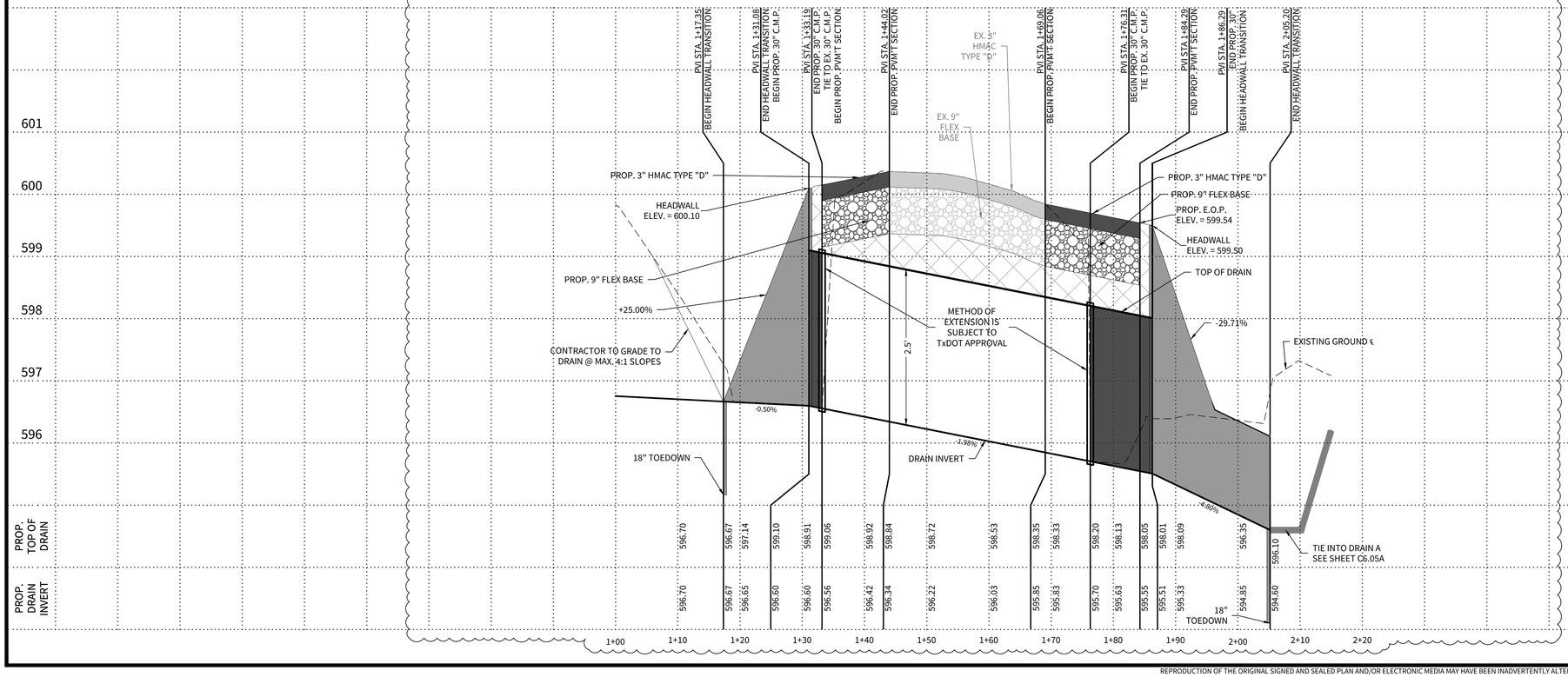
KEYNOTES

1	EX. EDGE OF PAVEMENT	8	PROP. GUTTER
2	PROP. RELOCATED SIGN	9	PROP. CURB
3	PROP. RELOCATED MAILBOX	10	PROP. HEADER CURB
4	EX. 30" C.M.P.	11	PROP. EDGE OF PAVEMENT
5	PROP.CONC. HEADWALL	12	PROP. PAVEMENT WIDENING
6	EX. OVERHEAD ELECTRIC	13	PROP. 18" C.M.P.
7	EX. POWER POLE	14	EX. 8" SAN. SEWER

EXISTING 30" CMP

STA. 1+00.00 TO STA. 2+15.00

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 1'



CUDEENGINEERS.COM

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PARK HOUSE UNIT 1

FM 725 CULVERTS PLAN & PROFILES

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 05/13/2024 - TxDOT COMMENTS
2.
3.
4.
5.
6.
7.
8.

JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C8.DR5

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (5)

Slope	Dia of Pipe (D)	Values for One Pipe						Values to be Added for Each Add'l Pipe	
		W	X	Y	L	Reinf (Lbs)	Conc (CY) (1)	X and W	Reinf (Lbs)	Conc (CY) (1)
2:1	12"	4' - 7 ½"	2' - 6"	2' - 10"	3' - 3 ½"	88	0.6	1' - 9"	20	0.2
	15"	5' - 5 ⅞"	2' - 9 ½"	3' - 4"	3' - 10 ½"	103	0.7	2' - 2"	24	0.3
	18"	6' - 4 ⅛"	3' - 1"	3' - 10"	4' - 5"	124	0.9	2' - 8"	32	0.3
	21"	7' - 2 ⅜"	3' - 4 ½"	4' - 4"	5' - 0"	143	1.1	3' - 1"	43	0.4
	24"	8' - 2 ½"	3' - 9 ½"	4' - 10"	5' - 7"	164	1.3	3' - 7"	50	0.5
	27"	9' - 1"	4' - 1"	5' - 4"	6' - 2"	179	1.5	3' - 11"	56	0.6
	30"	9' - 11 ½"	4' - 4 ½"	5' - 10"	6' - 8 ⅞"	203	1.7	4' - 4"	65	0.8
	33"	10' - 10"	4' - 8"	6' - 4"	7' - 3 ⅜"	224	2.0	4' - 8"	71	0.9
	36"	11' - 8 ⅛"	4' - 11 ½"	6' - 10"	7' - 10 ⅜"	249	2.2	5' - 1"	81	1.0
	42"	13' - 5 ⅛"	5' - 6 ½"	7' - 10"	9' - 0 ½"	298	2.8	5' - 10"	97	1.3
	48"	15' - 9"	6' - 1 ½"	9' - 4"	10' - 9 ½"	360	3.8	6' - 7"	117	1.7
	54"	17' - 5 ⅜"	6' - 8 ½"	10' - 4"	11' - 11 ½"	427	4.5	7' - 6"	151	2.1
	60"	19' - 2 ⅜"	7' - 3 ½"	11' - 4"	13' - 1"	481	5.3	8' - 3"	174	2.5
	66"	20' - 11 ½"	7' - 10 ½"	12' - 4"	14' - 3"	544	6.2	8' - 9"	194	2.9
	72"	22' - 8 ½"	8' - 5 ½"	13' - 4"	15' - 4 ⅜"	601	7.1	9' - 4"	213	3.3
3:1	12"	6' - 3"	2' - 6"	4' - 3"	4' - 11"	118	0.8	1' - 9"	22	0.2
	15"	7' - 5"	2' - 9 ½"	5' - 0"	5' - 9 ⅛"	137	1.1	2' - 2"	28	0.3
	18"	8' - 6 ⅜"	3' - 1"	5' - 9"	6' - 7 ⅜"	170	1.3	2' - 8"	37	0.5
	21"	9' - 8 ⅜"	3' - 4 ½"	6' - 6"	7' - 6"	195	1.6	3' - 1"	48	0.6
	24"	11' - 0"	3' - 9 ½"	7' - 3"	8' - 4 ½"	227	2.0	3' - 7"	58	0.7
	27"	12' - 2"	4' - 1"	8' - 0"	9' - 2 ⅜"	251	2.3	3' - 11"	67	0.8
	30"	13' - 4"	4' - 4 ½"	8' - 9"	10' - 1 ⅛"	293	2.7	4' - 4"	77	1.0
	33"	14' - 5 ⅜"	4' - 8"	9' - 6"	10' - 11 ⅜"	318	3.1	4' - 8"	84	1.2
	36"	15' - 7 ⅜"	4' - 11 ½"	10' - 3"	11' - 10"	351	3.5	5' - 1"	96	1.4
	42"	17' - 11 ½"	5' - 6 ½"	11' - 9"	13' - 6 ⅜"	432	4.5	5' - 10"	119	1.7
	48"	21' - 1 ⅜"	6' - 1 ½"	14' - 0"	16' - 2"	537	6.1	6' - 7"	146	2.3
	54"	23' - 5 ½"	6' - 8 ½"	15' - 6"	17' - 10 ⅜"	630	7.3	7' - 6"	186	2.9
	60"	25' - 9 ⅛"	7' - 3 ½"	17' - 0"	19' - 7 ½"	719	8.7	8' - 3"	219	3.4
	66"	28' - 1"	7' - 10 ½"	18' - 6"	21' - 4 ⅝"	811	10.1	8' - 9"	242	3.9
	72"	30' - 4 ⅜"	8' - 5 ½"	20' - 0"	23' - 1 ⅛"	924	11.7	9' - 4"	272	4.4
4:1	12"	7' - 10 ⅜"	2' - 6"	5' - 8"	6' - 6 ½"	148	1.1	1' - 9"	24	0.3
	15"	9' - 4"	2' - 9 ½"	6' - 8"	7' - 8 ½"	181	1.5	2' - 2"	32	0.4
	18"	10' - 9 ½"	3' - 1"	7' - 8"	8' - 10 ½"	221	1.9	2' - 8"	42	0.5
	21"	12' - 2 ⅜"	3' - 4 ½"	8' - 8"	10' - 0"	260	2.3	3' - 1"	57	0.7
	24"	13' - 9 ½"	3' - 9 ½"	9' - 8"	11' - 2"	301	2.8	3' - 7"	67	0.9
	27"	15' - 3"	4' - 1"	10' - 8"	12' - 3 ⅜"	334	3.3	3' - 11"	77	1.0
	30"	16' - 8 ⅛"	4' - 4 ½"	11' - 8"	13' - 5 ⅜"	385	3.8	4' - 4"	89	1.3
	33"	18' - 1 ⅜"	4' - 8"	12' - 8"	14' - 7 ½"	425	4.5	4' - 8"	101	1.4
	36"	19' - 7"	4' - 11 ½"	13' - 8"	15' - 9 ½"	472	5.1	5' - 1"	115	1.7
	42"	22' - 5 ⅜"	5' - 6 ½"	15' - 8"	18' - 1"	583	6.5	5' - 10"	141	2.1
	48"	26' - 6 ⅛"	6' - 1 ½"	18' - 8"	21' - 6 ⅜"	730	8.9	6' - 7"	175	2.8
	54"	29' - 5"	6' - 8 ½"	20' - 8"	23' - 10 ½"	875	10.7	7' - 6"	226	3.6
	60"	32' - 3 ⅜"	7' - 3 ½"	22' - 8"	26' - 2"	996	12.7	8' - 3"	264	4.3
	66"	35' - 2 ½"	7' - 10 ½"	24' - 8"	28' - 5 ⅜"	1,140	14.9	8' - 9"	300	4.9
	72"	38' - 1 ⅛"	8' - 5 ½"	26' - 8"	30' - 9 ½"	1,297	17.3	9' - 4"	334	5.6
6:1	12"	11' - 2"	2' - 6"	8' - 6"	9' - 9 ⅜"	224	1.9	1' - 9"	28	0.4
	15"	13' - 2 ⅛"	2' - 9 ½"	10' - 0"	11' - 6 ½"	268	2.5	2' - 2"	37	0.5
	18"	15' - 2 ½"	3' - 1"	11' - 6"	13' - 3 ½"	330	3.2	2' - 8"	50	0.7
	21"	17' - 2 ⅜"	3' - 4 ½"	13' - 0"	15' - 0 ⅜"	387	3.9	3' - 1"	69	0.9
	24"	19' - 4 ½"	3' - 9 ½"	14' - 6"	16' - 9"	453	4.8	3' - 7"	80	1.2
	27"	21' - 4 ⅜"	4' - 1"	16' - 0"	18' - 5 ⅜"	512	5.7	3' - 11"	96	1.4
	30"	22' - 5 ⅛"	4' - 4 ½"	17' - 6"	20' - 2 ½"	593	6.7	4' - 4"	110	1.7
	33"	25' - 5 ½"	4' - 8"	19' - 0"	21' - 11 ⅛"	675	7.8	4' - 8"	127	2.0
	36"	27' - 5 ⅜"	4' - 11 ½"	20' - 6"	23' - 8"	735	9.0	5' - 1"	144	2.3
	42"	31' - 6 ⅛"	5' - 6 ½"	23' - 6"	27' - 1 ½"	922	11.5	5' - 10"	179	3.0
	48"	37' - 3 ½"	6' - 1 ½"	28' - 0"	32' - 4"	1,191	15.9	6' - 7"	231	4.0
	54"	41' - 4 ⅛"	6' - 8 ½"	31' - 0"	35' - 9 ½"	1,424	19.2	7' - 6"	300	5.0
	60"	45' - 4 ⅜"	7' - 3 ½"	34' - 0"	39' - 3"	1,631	22.9	8' - 3"	353	6.0

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the Texas Department of Transportation for any purpose whatsoever. The Texas Department of Transportation assumes no responsibility for the incorrect results or damages resulting from its use.

DATE:
FILE:

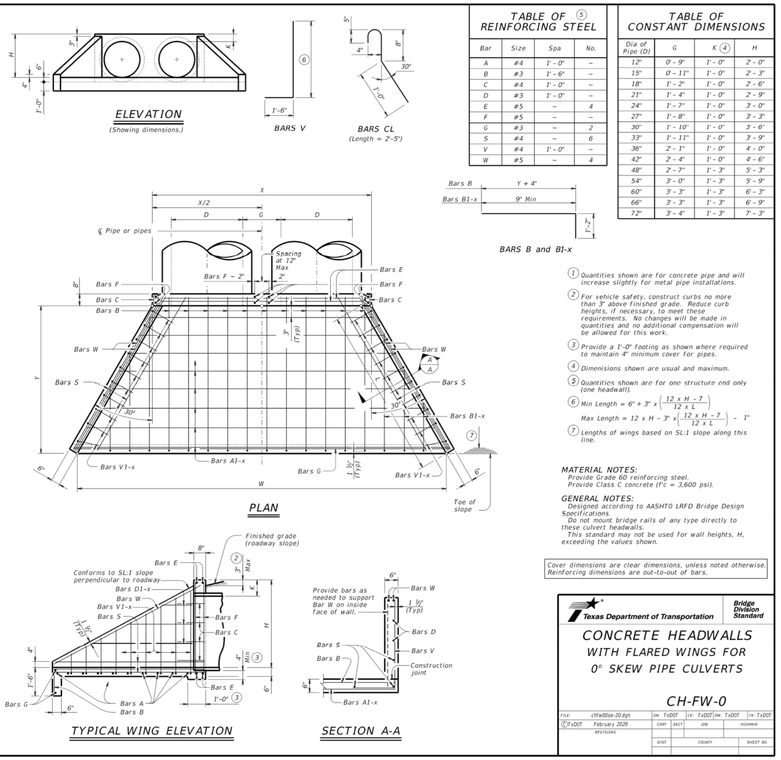

TABLE OF REINFORCING STEEL (5)

Bar	Size	Spa	No.
A	#4	1' - 0"	–
B	#3	1' - 6"	–
C	#4	1' - 0"	–
D	#3	1' - 0"	–
E	#5	–	4
F	#5	–	–
G	#3	–	2
S	#4	–	6
V	#4	1' - 0"	–
W	#5	–	4

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K (4)	H
12"	0' - 9"	1' - 0"	2' - 0"
15"	0' - 11"	1' - 0"	2' - 3"
18"	1' - 2"	1' - 0"	2' - 6"
21"	1' - 4"	1' - 0"	2' - 9"
24"	1' - 7"	1' - 0"	3' - 0"
27"	1' - 8"	1' - 0"	3' - 3"
30"	1' - 10"	1' - 0"	3' - 6"
33"	1' - 11"	1' - 0"	3' - 9"
36"	2' - 1"	1' - 0"	4' - 0"
42"	2' - 4"	1' - 0"	4' - 6"
48"	2' - 7"	1' - 3"	5' - 3"
54"	3' - 0"	1' - 3"	5' - 9"
60"	3' - 3"	1' - 3"	6' - 3"
66"	3' - 3"	1' - 3"	6' - 9"
72"	3' - 4"	1' - 3"	7' - 3"

(1) Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

(2) For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(3) Provide a 1'-0" footing as shown where required to maintain 4" minimum cover for pipes.

(4) Dimensions shown are usual and maximum.

(5) Quantities shown are for one structure end only (one headwall).

(6) Min Length = 6" + 3" x $\left[\frac{12 \times H - 7}{12 \times L}\right]$

Max Length = 12 x H - 3" x $\left[\frac{12 \times H - 7}{12 \times L}\right]$ - 1"

(7) Lengths of wings based on SL:1 slope along this line.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation | Bridge Division Standard

CONCRETE HEADWALLS WITH FLARED WINGS FOR 0° SKEW PIPE CULVERTS

CH-FW-0

FILE:	ch fw00a-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.

CUDEENGINEERS.COM

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PARK HOUSE UNIT 1

TXDOT HEADWALL DETAIL

DATE
01/08/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

CUDE ENGINEERS
TBPELS No. 10048500

C8.DR6

R:\04154\03\2-SHOP\Plots\04153 TXDOT HEADWALL DETAILS.dwg, 2025/01/08 3:02pm, Sabrina Kelly

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

KEYNOTES:

1 CONTRACTOR TO INSTALL DRIVEWAY WITH INFRASTRUCTURE

2 CONTRACTOR TO INSTALL EMERGENCY GATE WITH INFRASTRUCTURE MUST MEET SEGUIN STANDARDS

3 PROP. 12' CONCRETE TRAIL PATH

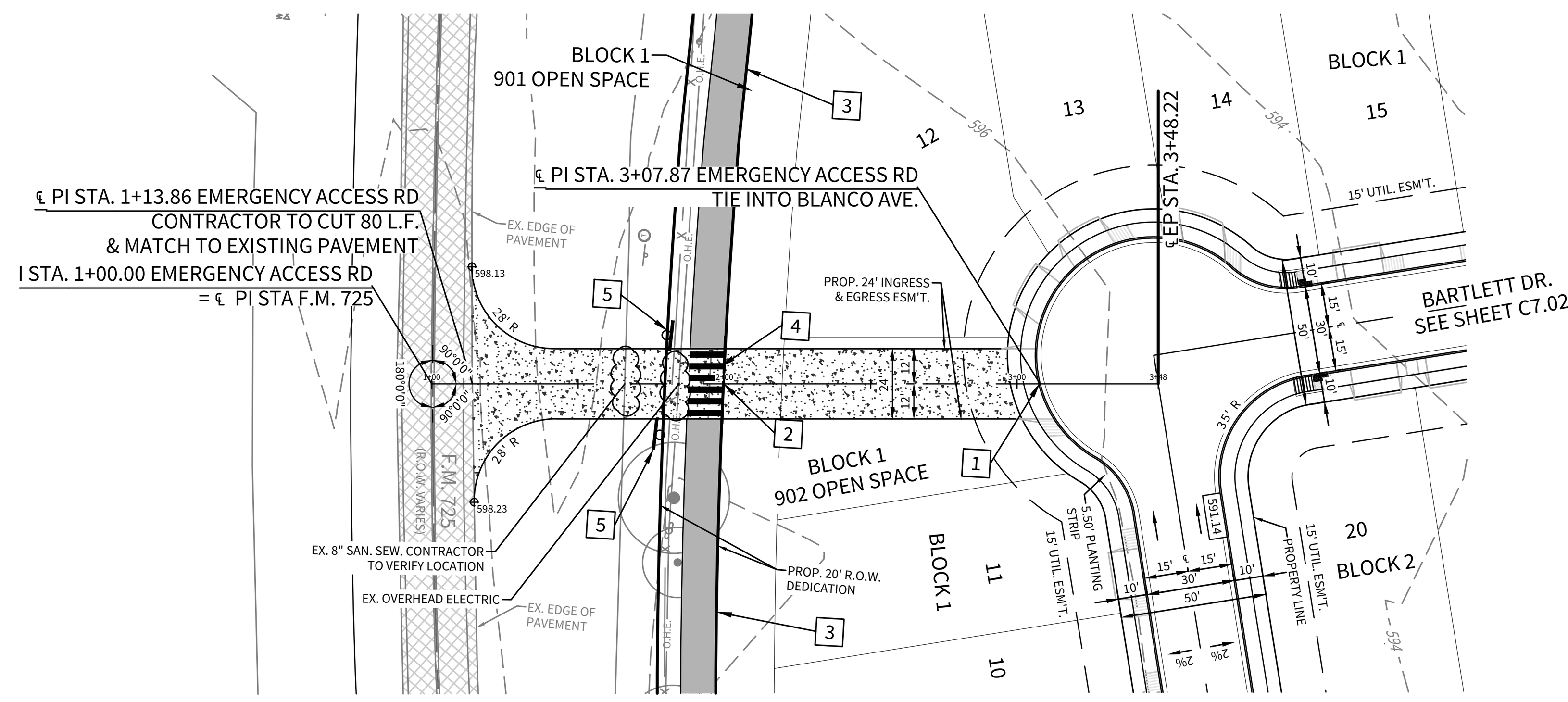
4 PROP. 12' WIDE CROSSWALK STRIPING

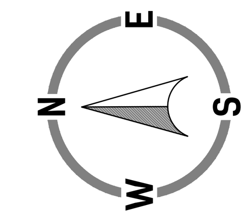
5 CONTRACTOR TO INSTALL 12" X 18" "EMERGENCY VEHICLES ONLY" SIGN

ELEVATIONS:

xxx.xx PROPOSED TOP OF CONCRETE CURB ELEVATION

Xxxx.xx PROPOSED ASPHALT PAVEMENT ELEVATION





PROPOSED DRIVEWAY LOCATION

CONCRETE RIP-RAP

EARTHEN CHANNEL

STREET WASHOUT

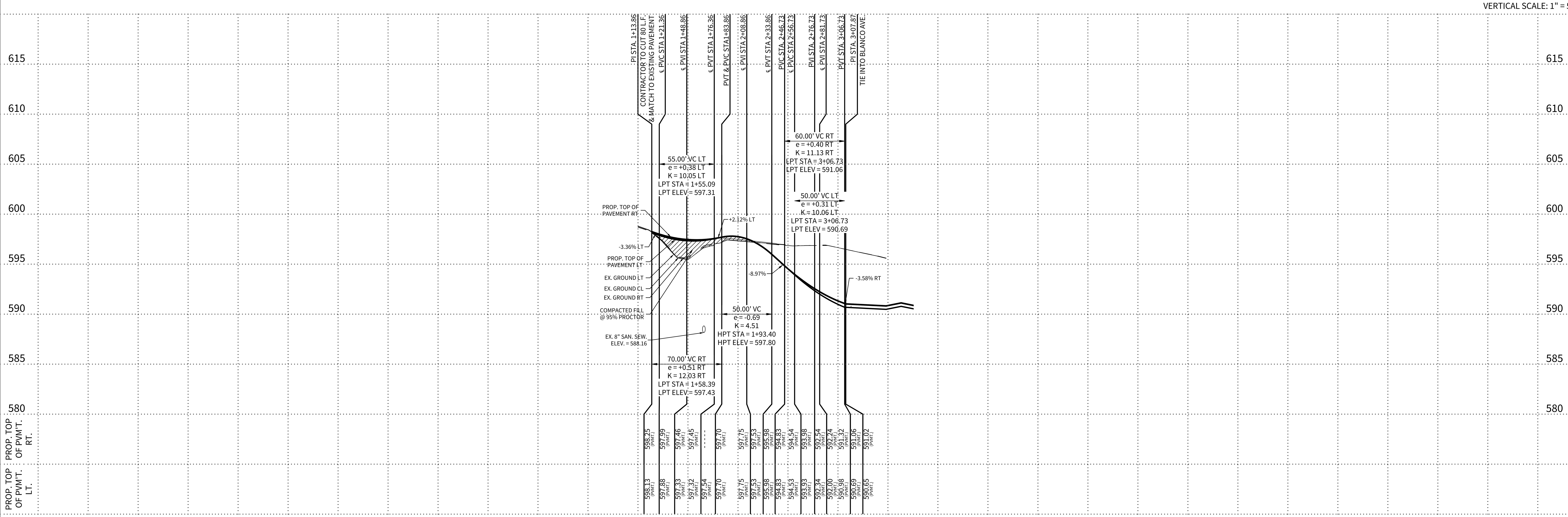
SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

PERMIT IS NEEDED TO WORK ON TxDOT R.O.W.
TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " " OR " " UNLESS OTHERWISE NOTED. (SHEET C7.D6)

EMERGENCY GATED ACCESS RD

STA. 1+00.00 TO STA. 3+48.22

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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PARK HOUSE UNIT 1

EMERGENCY ACCESS PLAN & PROFILE

DATE	08/07/2025
PROJECT NO.	04154-000
DRAWN BY	SG/JVA
CHECKED BY	JL/AC

REVISIONS 1. 2. 3. 4. 5. 6. 7. 8.

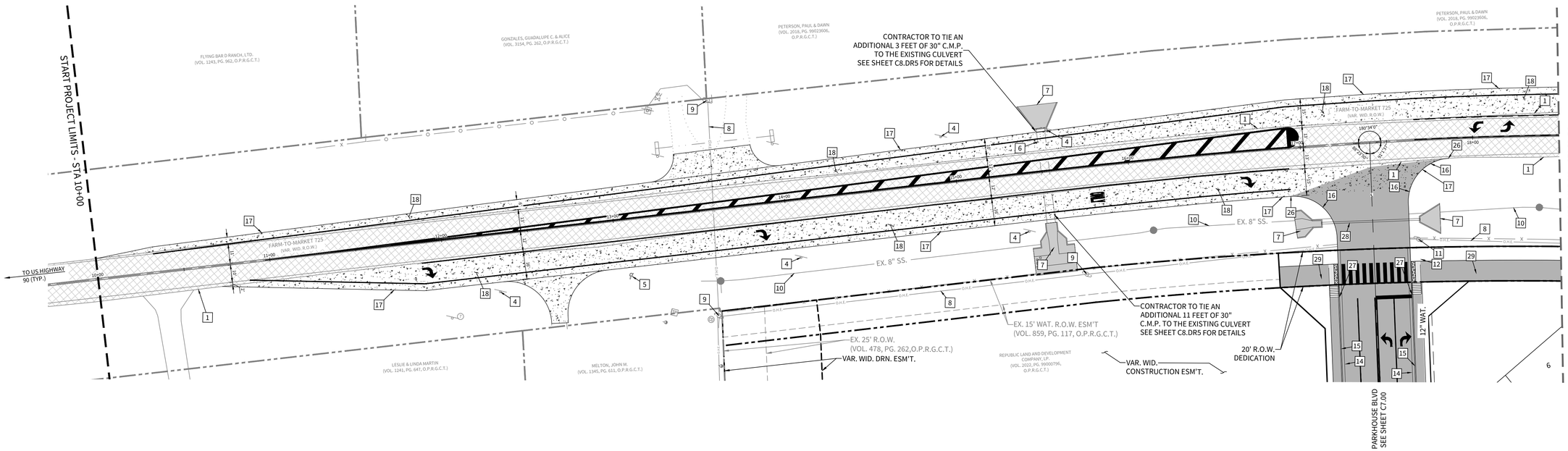
STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C8.S1

R:\04154\001\2-DWG\4-Plans\C8.10 STREET PLAN & PROFILE - EMERGENCY ACCESS.dwg 2025/08/07 9:35am sgonzales

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



SCALE: 1"=30'

0 30 60

NOTES:

1. ALL PAVEMENT MARKINGS AND STRIPING SHALL BE HOT APPLIED THERMOPLASTIC PAVEMENT MARKINGS.
2. THE CONTRACTOR SHALL BE AWARE THAT EXISTING OVERHEAD AND UNDERGROUND ELECTRIC, AND SANITARY SEWER MAINS EXIST ALONG FM 725. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED, POTHOLED TO VERIFY DEPTH, AND COMPARE WITH THE GEOTECH REPORT PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.
3. CONTRACTOR TO COMPLY WITH ALL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) REGULATIONS, LATEST EDITION, AND ALL TXDOT REQUIREMENTS.
4. CONTRACTOR TO NOTIFY THE CITY OF SEGUIN AND TXDOT 24 HOURS PRIOR TO CONSTRUCTION COMMENCEMENT.
5. CONTRACTOR TO PROVIDE ALL NECESSARY TRAFFIC CONTROL DEVICES TO MAINTAIN TWO-WAY TRAFFIC AT ALL TIMES.
6. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITTING.
7. CONTRACTOR TO PERFORM CONSTRUCTION ONLY DURING THE WORKING HOURS SET BY THE CITY OF SEGUIN AND TXDOT.
8. CONTRACTOR IS RESPONSIBLE TO REVEGETATING ALL DISTURBED LIMITS OF THE EXISTING FM 725 RIGHT OF WAY UPON COMPLETION OF GRADING AND IMPROVEMENTS.
9. CONTRACTOR IS RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE AT ALL TIMES DURING CONSTRUCTION.
10. CONTRACTOR IS REQUIRED TO PROVIDE ACCESS TO ADJACENT PROPERTY AND HOMEOWNERS AT ALL TIMES.
11. CONTRACTOR IS RESPONSIBLE FOR RESTORING ALL DAMAGED OR REMOVED DRIVEWAYS AND FENCING TO EXISTING OR BETTER CONDITION.
12. CONTRACTOR IS RESPONSIBLE FOR SHORING POWER POLES IF AND AS NEEDED. N.S.P.I.

LEGEND:

- EXISTING ROW LINE
- PROPOSED ROW LINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING WIRE FENCE
- EXISTING IRON FENCE
- EXISTING WATER VALVE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING TELECOM MANHOLE
- EXISTING TELECOM PEDESTAL
- EXISTING GUY WIRE
- EXISTING POWER POLE
- EXISTING SIGN
- EXISTING MAILBOX
- EXISTING PAVEMENT TO REMAIN
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE RIP-RAP

KEYNOTES

1. EX. EDGE OF PAVEMENT
2. EX. STRIPING TO BE REMOVED
3. EX. STRIPING TO REMAIN
4. PROP. RELOCATED SIGN
5. PROP. RELOCATED MAILBOX
6. EX. 30" C.M.P.
7. PROP. CONC. HEADWALL (SEE TxDOT DETAIL CH-FW-0)
8. EX. OVERHEAD ELECTRIC
9. EX. POWER POLE
10. EX. 8" SANITARY SEWER MAIN
11. PROP. RELOCATED POWER POLE
12. PROP. 12" WATER MAIN
13. PROP. 8" FORCE MAIN
14. PROP. GUTTER
15. PROP. CURB
16. PROP. HEADER CURB
17. PROP. EDGE OF PAVEMENT
18. PROP. PAVEMENT WIDENING
19. PROP. LEFT TURN LANE MARKER
20. PROP. RIGHT TURN LANE MARKER
21. PROP. "ONLY" MARKER
22. PROP. 8" WHITE THERMOPLASTIC PAVEMENT MARKING
23. PROP. 4" DOUBLE YELLOW THERMO-PLASTIC PVM'T. MARKING
24. PROP. 24" WHITE PAVEMENT STRIPING STOP BAR
25. PROP. 24" YELLOW THERMO-PLASTIC PVM'T. MARKING
26. BEGIN HEADER CURB
27. END HEADER CURB/BEGIN CURB & GUTTER
28. PROP. 18" C.M.P.
29. PROP. 12' CONCRETE TRAIL PATH
30. PROP. 12' WIDE CROSSWALK STRIPING
31. PROP. EMERGENCY ACCESS

CAUTION!!
THE CONTRACTOR SHALL BE AWARE THAT A SANITARY SEWER EXISTS ALONG FM 725, ALONG WITH EXISTING OVERHEAD AND UNDERGROUND ELECTRIC UTILITIES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

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PARK HOUSE UNIT 1

FM 725 IMPROVEMENTS PLAN

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

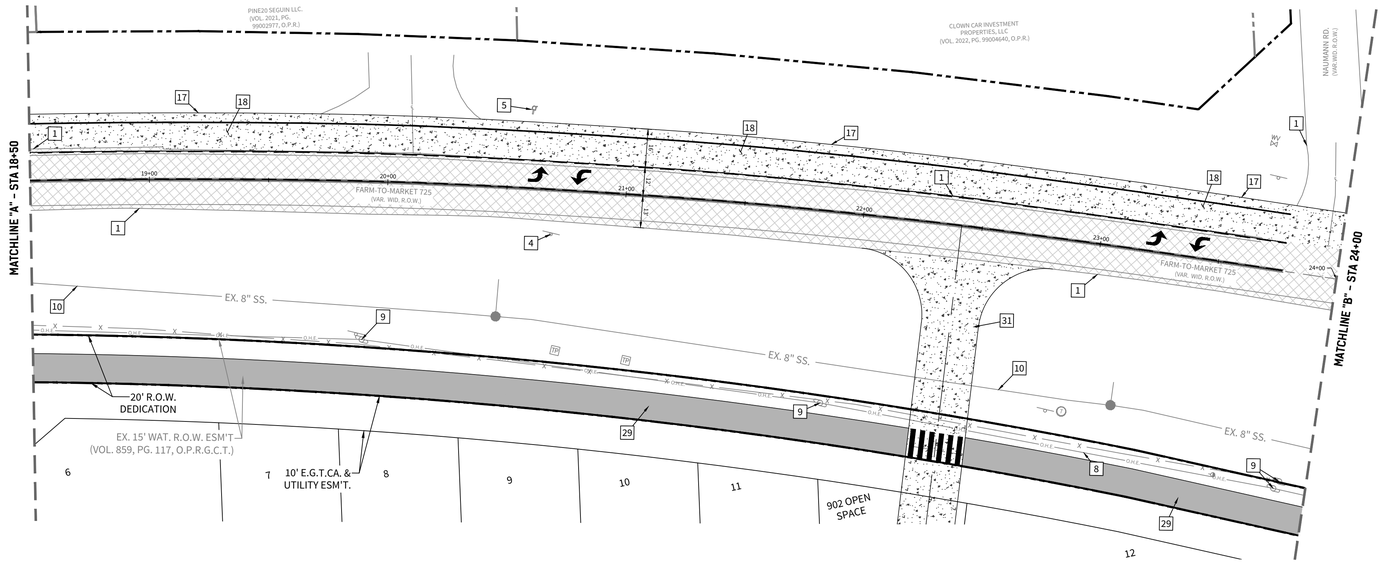
REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

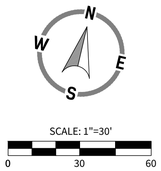
STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C8.S2

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.





SCALE: 1"=30'

0 30 60

NOTES:

1. ALL PAVEMENT MARKINGS AND STRIPING SHALL BE HOT APPLIED THERMOPLASTIC PAVEMENT MARKINGS.
2. THE CONTRACTOR SHALL BE AWARE THAT EXISTING OVERHEAD AND UNDERGROUND ELECTRIC, AND SANITARY SEWER MAINS EXIST ALONG FM 725. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED, POTHOLED TO VERIFY DEPTH, AND COMPARE WITH THE GEOTECH REPORT PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.
3. CONTRACTOR TO COMPLY WITH ALL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) REGULATIONS, LATEST EDITION, AND ALL TXDOT REQUIREMENTS.
4. CONTRACTOR TO NOTIFY THE CITY OF SEGUIN AND TXDOT 24 HOURS PRIOR TO CONSTRUCTION COMMENCEMENT.
5. CONTRACTOR TO PROVIDE ALL NECESSARY TRAFFIC CONTROL DEVICES TO MAINTAIN TWO-WAY TRAFFIC AT ALL TIMES.
6. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITTING.
7. CONTRACTOR TO PERFORM CONSTRUCTION ONLY DURING THE WORKING HOURS SET BY THE CITY OF SEGUIN AND TXDOT.
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11. CONTRACTOR IS RESPONSIBLE FOR RESTORING ALL DAMAGED OR REMOVED DRIVEWAYS AND FENCING TO EXISTING OR BETTER CONDITION.
12. CONTRACTOR IS RESPONSIBLE FOR SHORING POWER POLES IF AND AS NEEDED. N.S.P.I.

LEGEND:

- EXISTING ROW LINE
- PROPOSED ROW LINE
- EXISTING OVERHEAD ELECTRIC (O.H.E.)
- EXISTING WIRE FENCE
- EXISTING IRON FENCE
- EXISTING WATER VALVE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING TELECOM MANHOLE
- EXISTING TELECOM PEDESTAL
- EXISTING GUY WIRE
- EXISTING POWER POLE
- EXISTING SIGN
- EXISTING MAILBOX
- EXISTING PAVEMENT TO REMAIN
- PROPOSED PAVEMENT WIDENING

KEYNOTES

1. EX. EDGE OF PAVEMENT
2. EX. STRIPING TO BE REMOVED
3. EX. STRIPING TO REMAIN
4. PROP. RELOCATED SIGN
5. PROP. RELOCATED MAILBOX
6. EX. 30" C.M.P.
7. PROP. CONC. HEADWALL (SEE TxDOT DETAIL CH-FW-0)
8. EX. OVERHEAD ELECTRIC
9. EX. POWER POLE
10. EX. 8" SANITARY SEWER MAIN
11. PROP. RELOCATED POWER POLE
12. PROP. 12" WATER MAIN
13. PROP. 8" FORCE MAIN
14. PROP. GUTTER
15. PROP. CURB
16. PROP. HEADER CURB
17. PROP. EDGE OF PAVEMENT
18. PROP. PAVEMENT WIDENING
19. PROP. LEFT TURN LANE MARKER
20. PROP. RIGHT TURN LANE MARKER
21. PROP. "ONLY" MARKER
22. PROP. 8" WHITE THERMOPLASTIC PAVEMENT MARKING
23. PROP. 4" DOUBLE YELLOW THERMO-PLASTIC PVM'T. MARKING
24. PROP. 24" WHITE PAVEMENT STRIPING STOP BAR
25. PROP. 24" YELLOW THERMO-PLASTIC PVM'T. MARKING
26. BEGIN HEADER CURB
27. END HEADER CURB/BEGIN CURB & GUTTER
28. PROP. 18" C.M.P.
29. PROP. 12' CONCRETE TRAIL PATH
30. PROP. 12' WIDE CROSSWALK STRIPING
31. PROP. EMERGENCY ACCESS

CAUTION!!

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CUDEENGINEERS.COM

CUDE ENGINEERS

1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE UNIT 1

FM 725 IMPROVEMENTS PLAN

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS 1 2 3 4 5 6 7 8

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C8.S3

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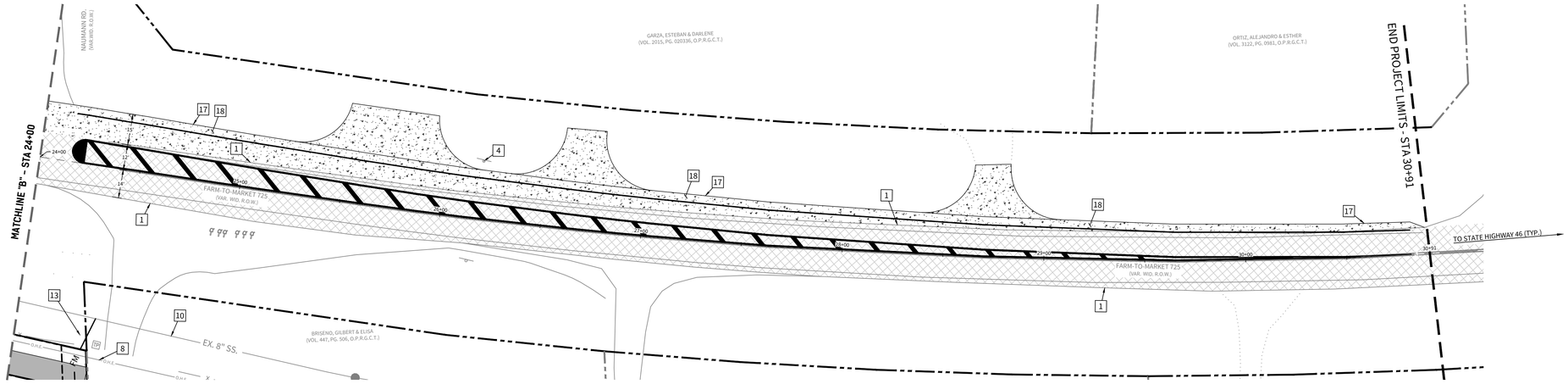
S:\04154\001\DWG\PARKHOUSE\04154-001 PH1 IMPROVEMENTS\Sheets\04154-001 C8.S3.dwg 8/25/2025 9:33:44am sgonzales



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- EXISTING POWER POLE
- EXISTING SIGN
- EXISTING MAILBOX
- EXISTING PAVEMENT TO REMAIN
- PROPOSED PAVEMENT WIDENING

KEYNOTES

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SCALE: 1"=30'
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PARK HOUSE UNIT 1

FM 725 IMPROVEMENTS PLAN

DATE
08/07/2025
PROJECT NO.
04154-000
DRAWN BY
SG/JVA
CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C8.S4

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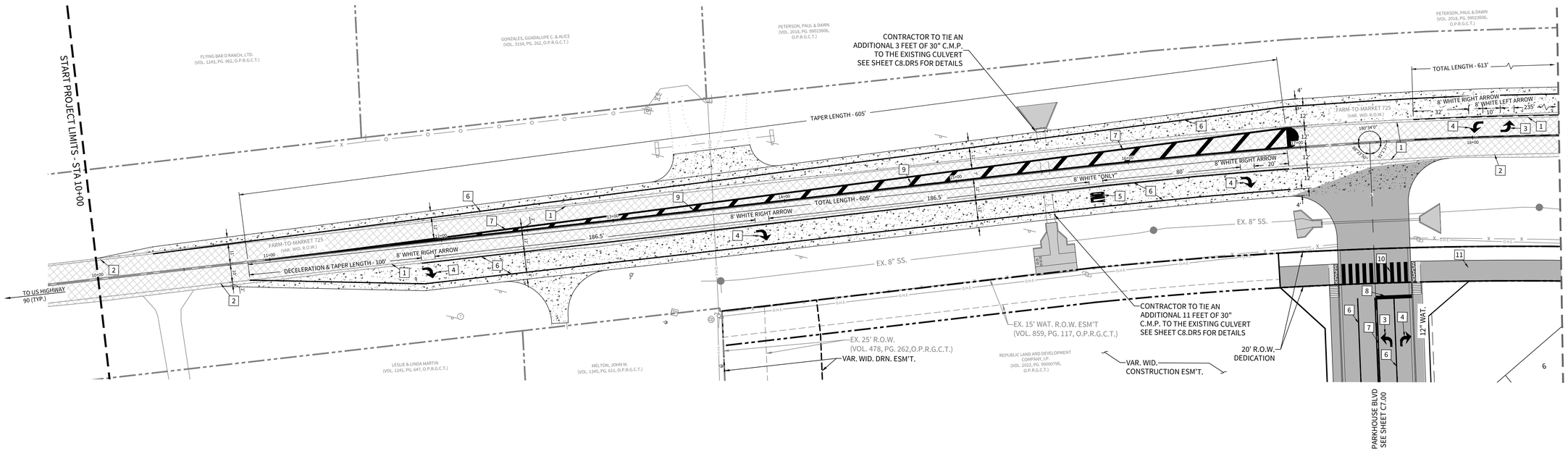
R:\04154\000\2-DWG\4-Plans\Cad\1 FM 725 IMPROVEMENTS PLAN.dwg 2025/08/07 9:58am sgonzales



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- EXISTING PAVEMENT TO REMAIN
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE RIP-RAP

KEYNOTES

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PARK HOUSE UNIT 1

FM 725 STRIPING PLAN

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

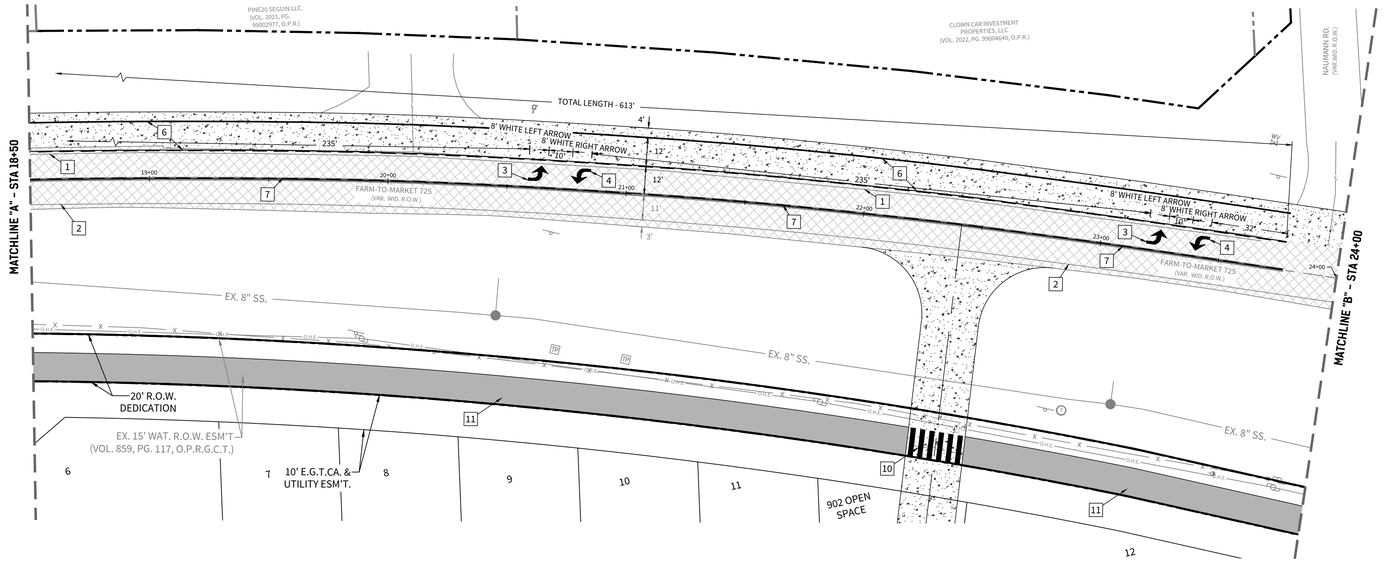
REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

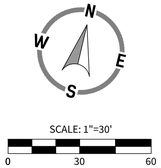
STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C8.S5

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.





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KEYNOTES

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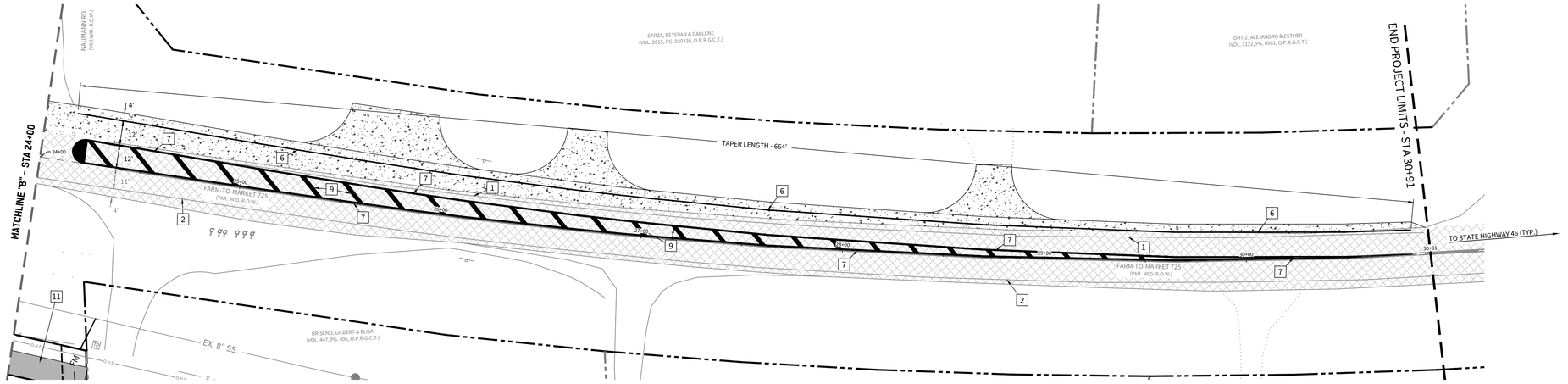

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11. PROP. 12' CONCRETE TRAIL PATH

CAUTION!!
THE CONTRACTOR SHALL BE AWARE THAT A SANITARY SEWER EXISTS ALONG FM 725, ALONG WITH EXISTING OVERHEAD AND UNDERGROUND ELECTRIC UTILITIES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

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CUDE ENGINEERS
1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
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PARK HOUSE UNIT 1

FM 725 STRIPING PLAN

DATE 08/07/2025
PROJECT NO. 04154-000
DRAWN BY SG/JVA
CHECKED BY JL/AC

REVISIONS 1. 2. 3. 4. 5. 6. 7. 8.

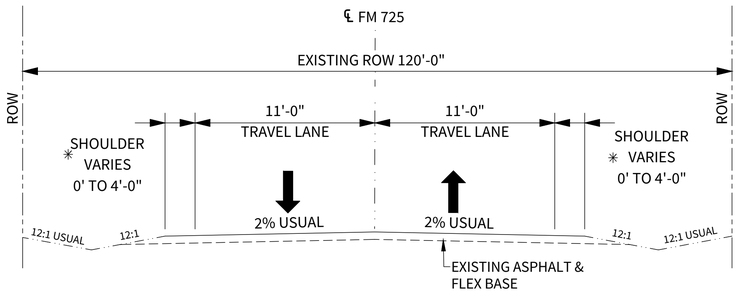
STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED
PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

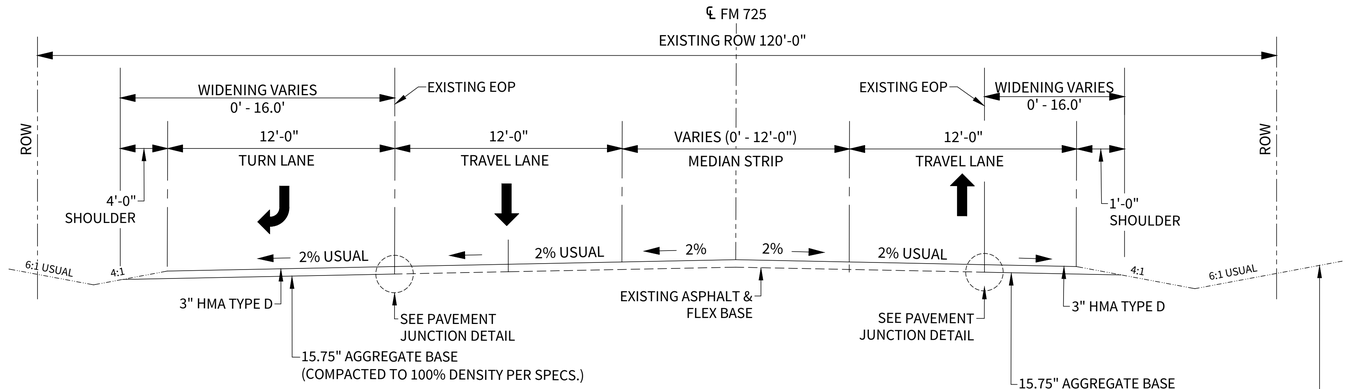
C8.S7

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

R:\04154\000\2-DWG\4-Plans\CAD\FM 725 IMPROVEMENTS PLAN Aug 2025.DWG 7:54am sgonzales



EXISTING TYPICAL SECTION
STA 10+00 - STA 11+87 N.T.S.



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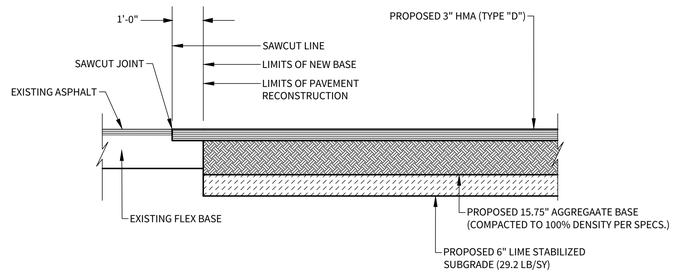
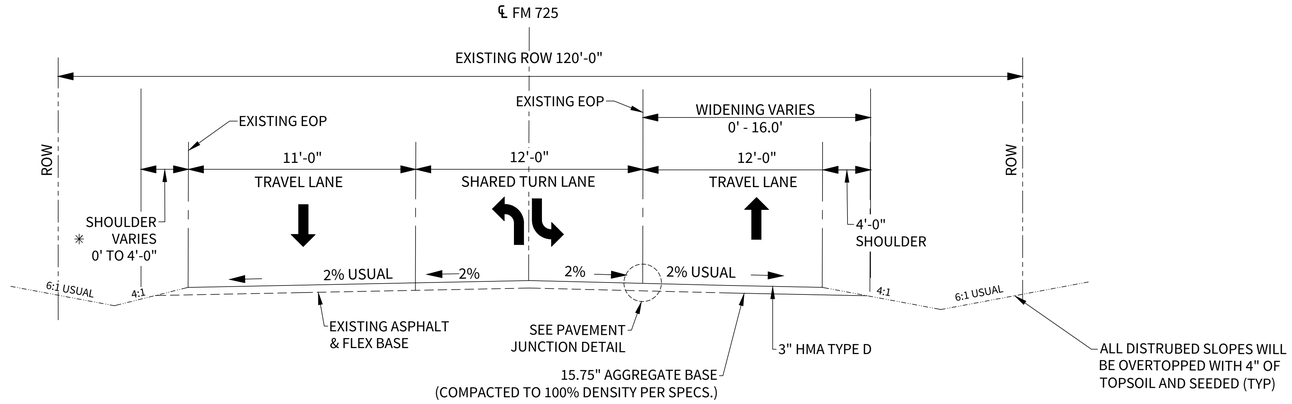


FM 725 PAVEMENT STRUCTURE DETAIL
N.T.S.

NOTE:
CONTRACTOR SHALL COORDINATE WITH GEOTECHNICAL ENGINEER TO CONFIRM APPLICABLE SUBGRADE TREATMENT.



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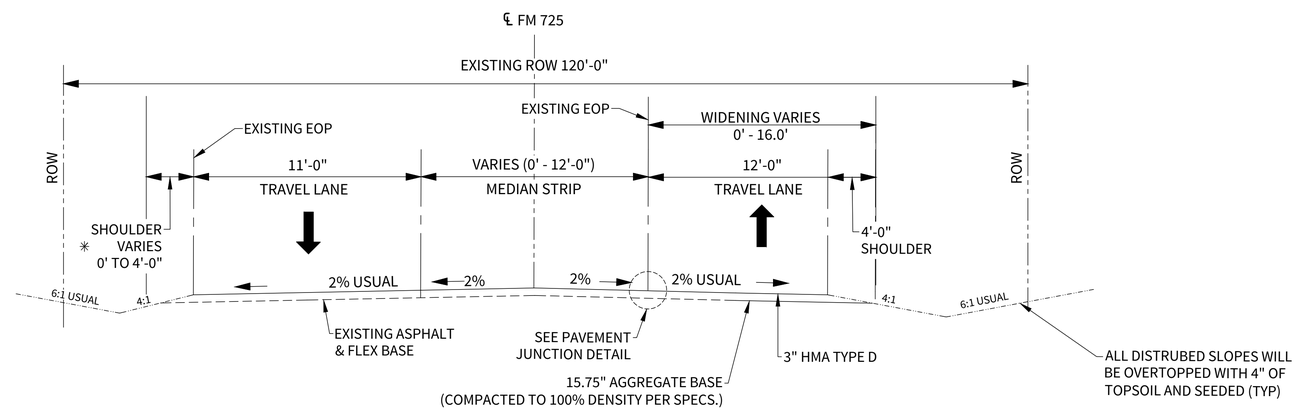

TURN LANE TYPICAL SECTION 3-3
STA 24+15 - STA 30+91 N.T.S.

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PARK HOUSE UNIT 1

TXDOT TYPICAL SECTIONS

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
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STATE OF TEXAS
JOSE A. LOZANO
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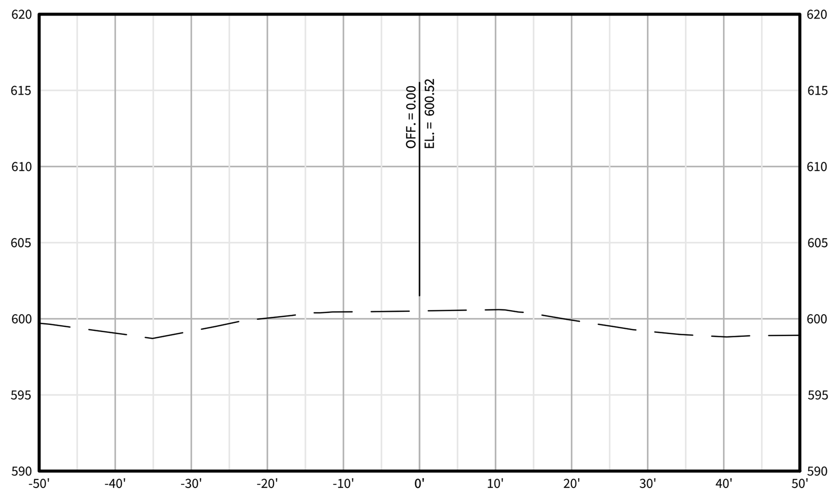
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C8.S8

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 10'
0 20 40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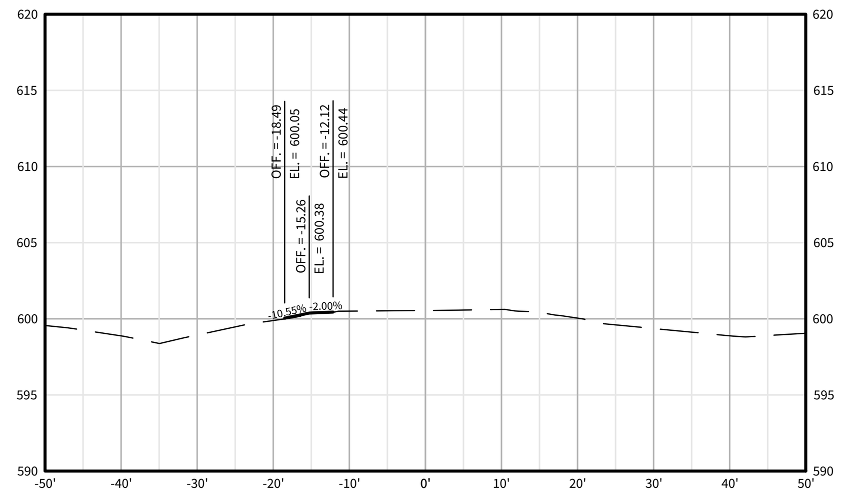
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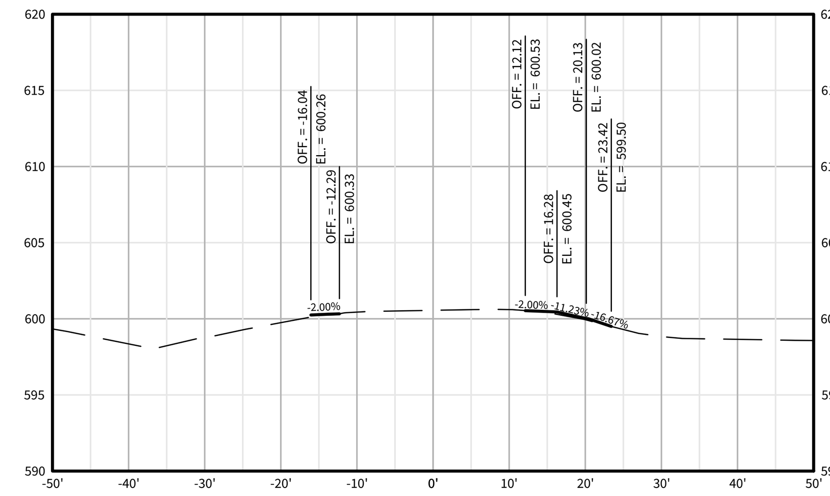
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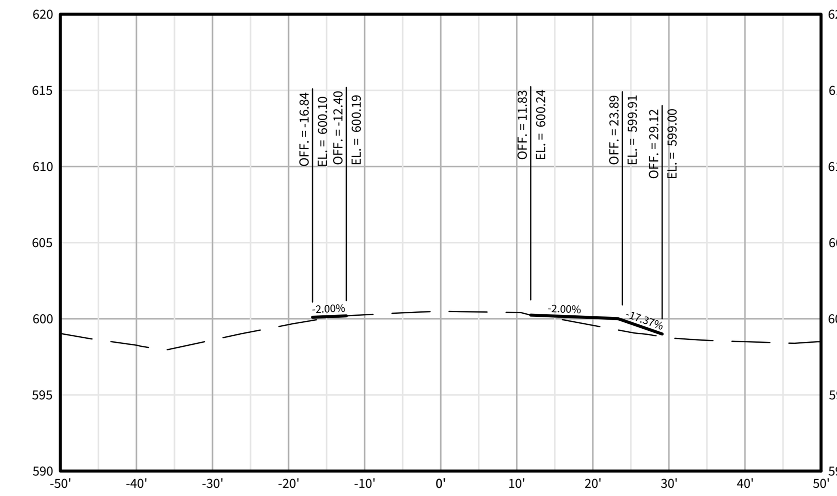
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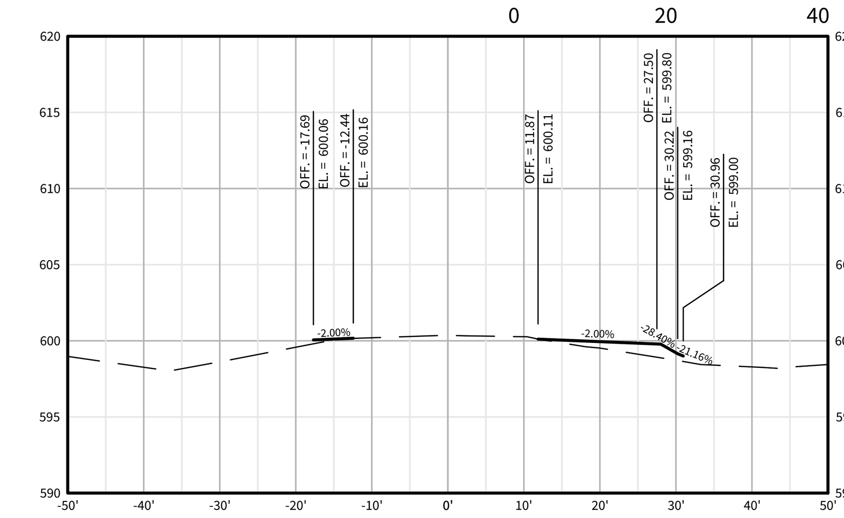
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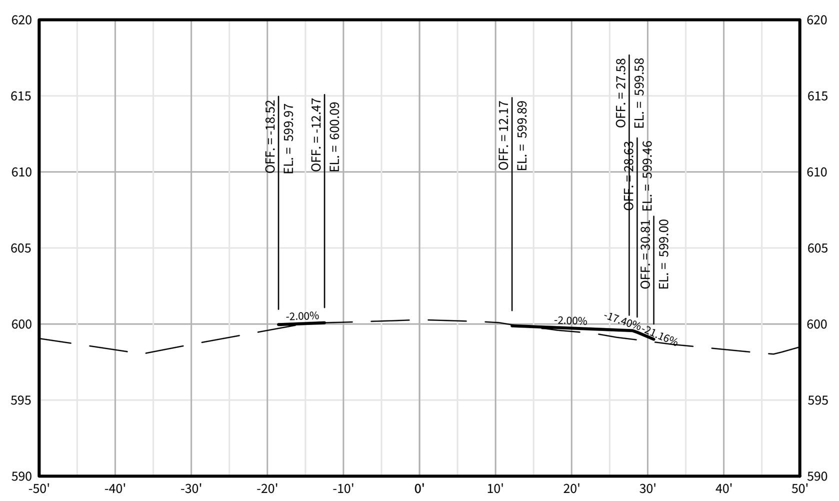
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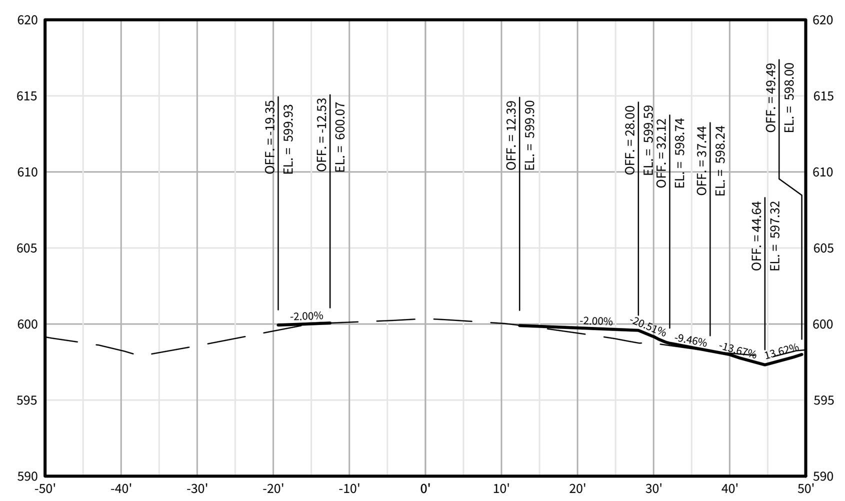
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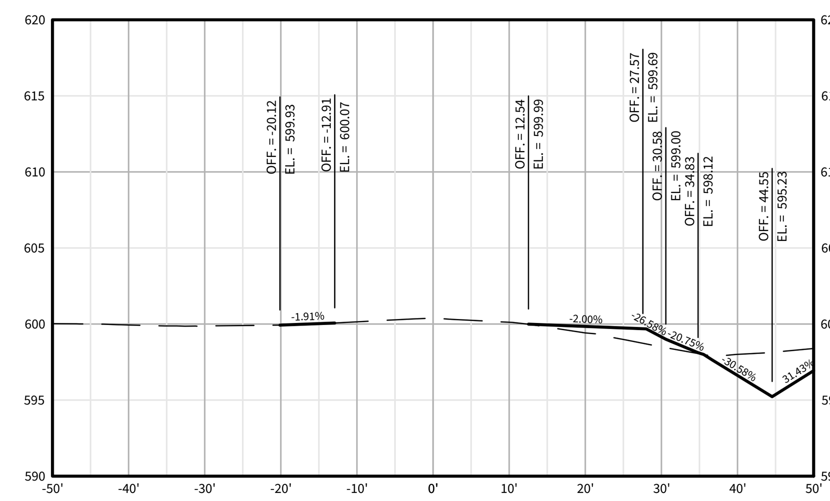
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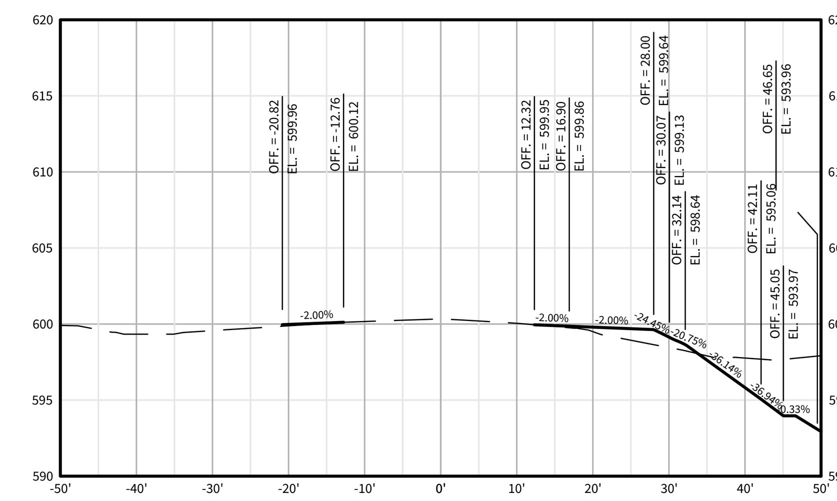
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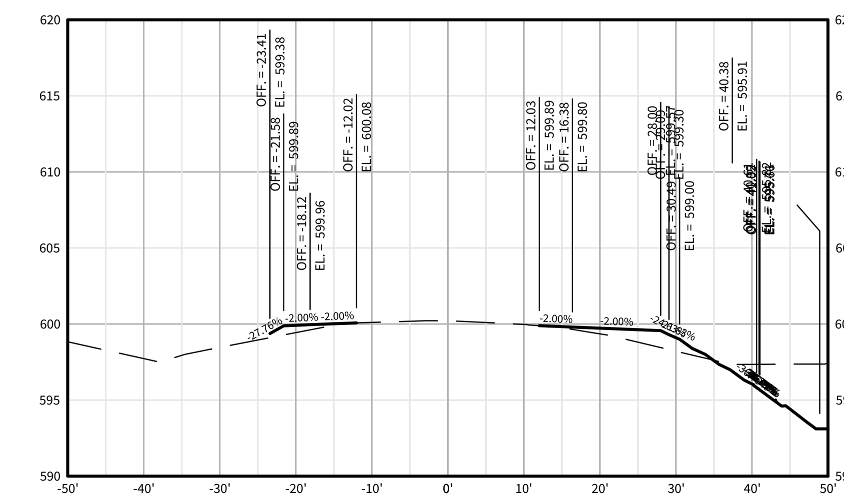
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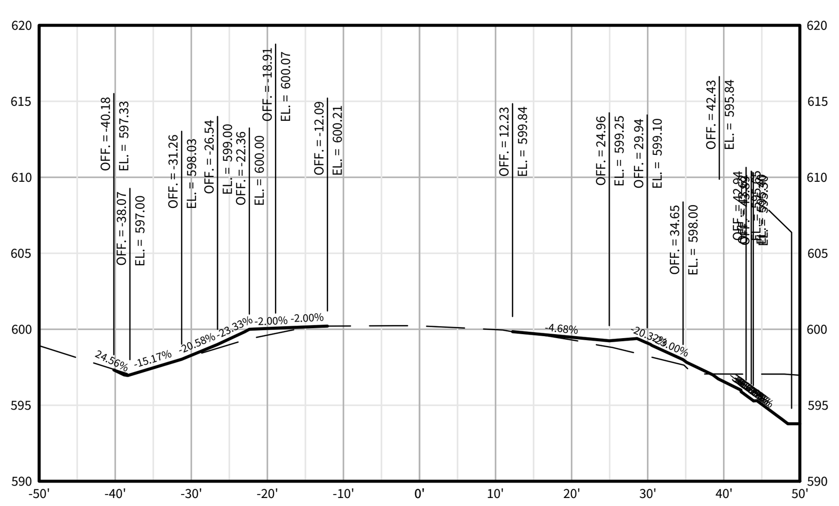
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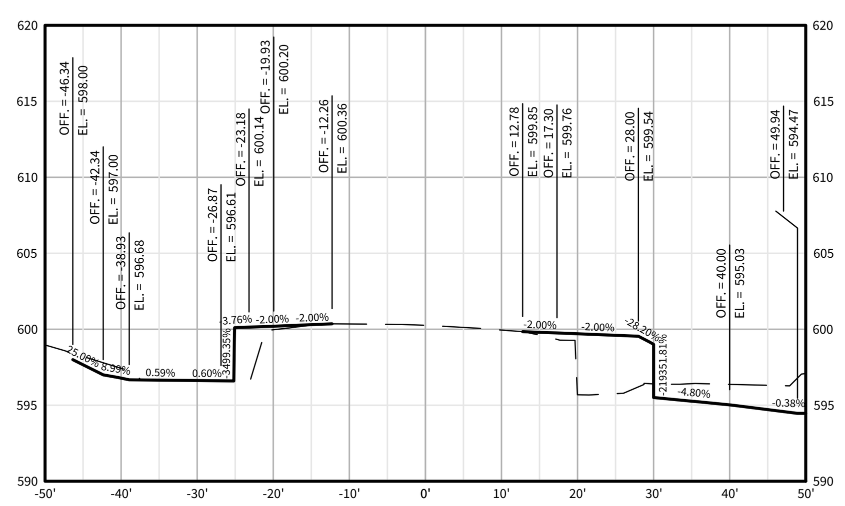
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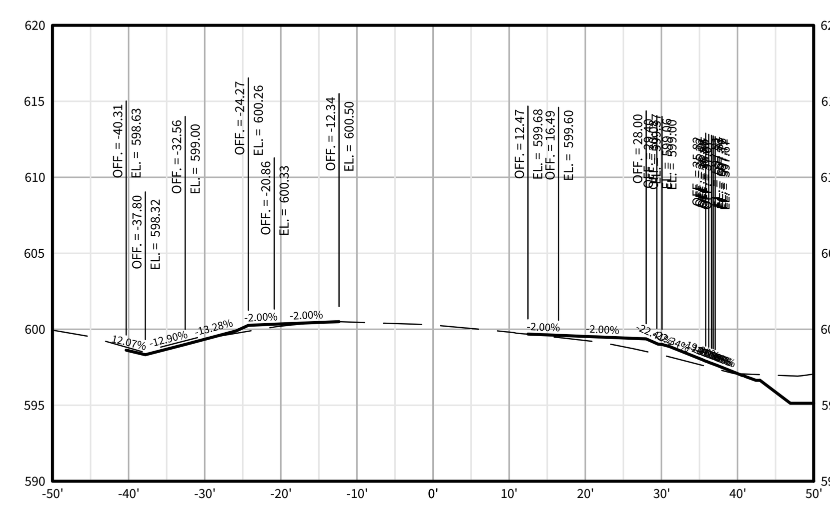
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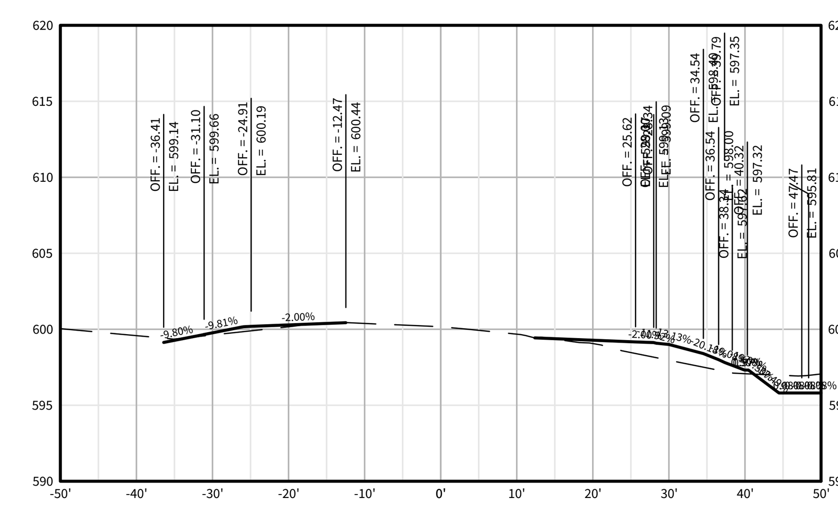
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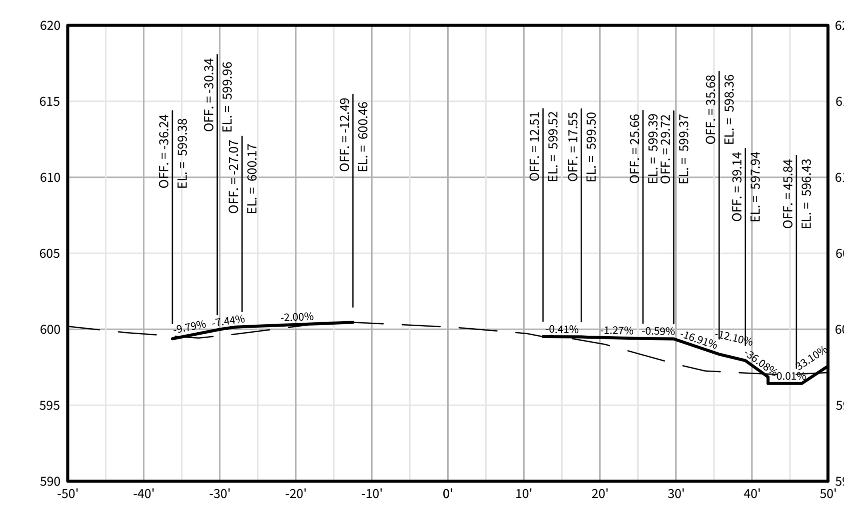
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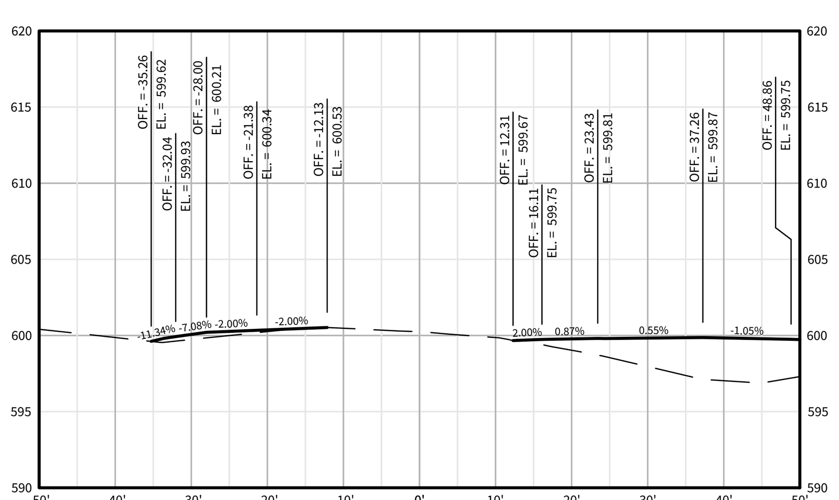
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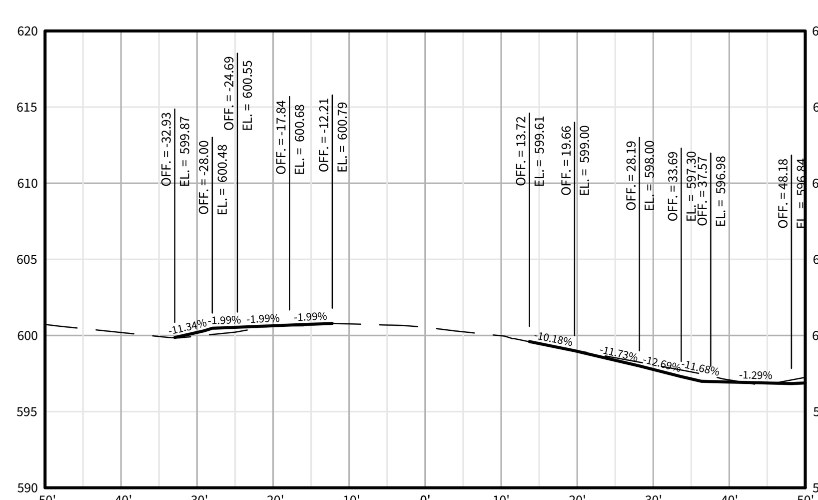
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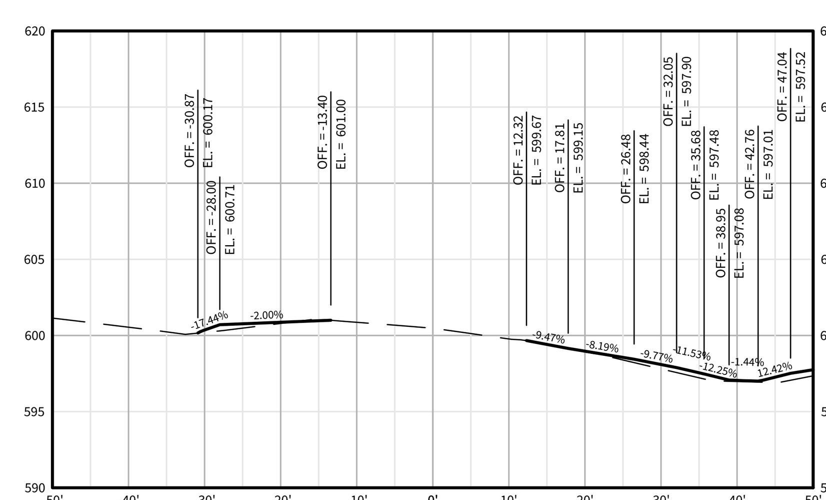
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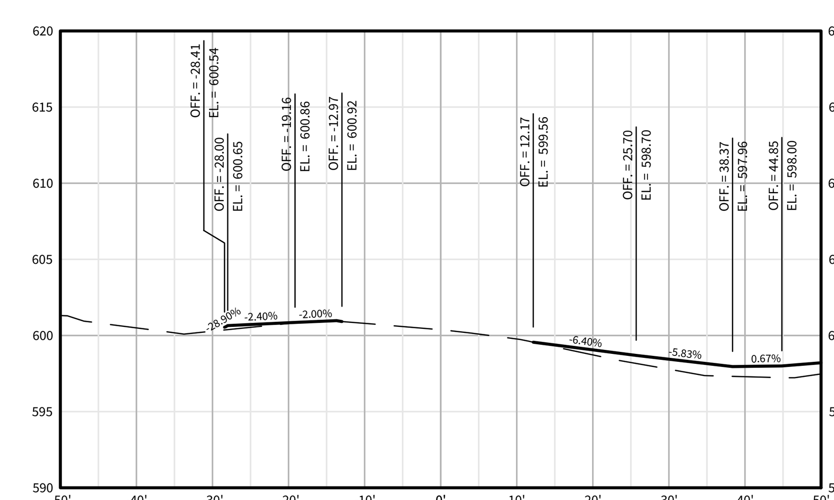
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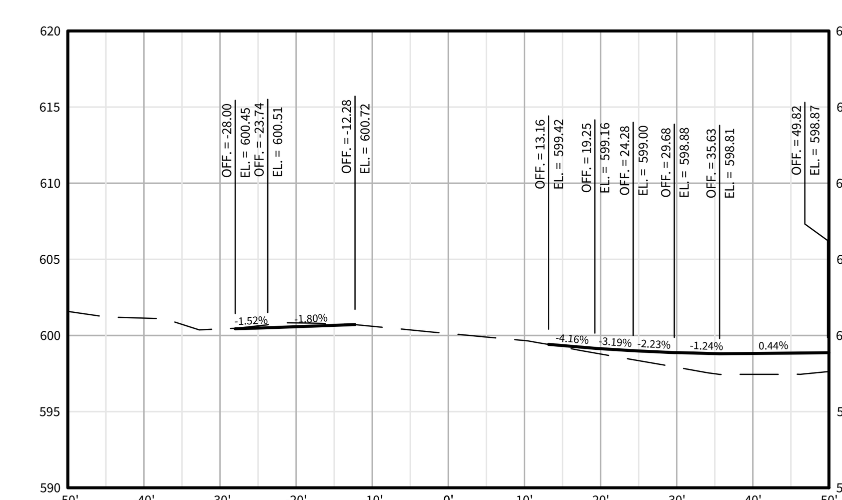
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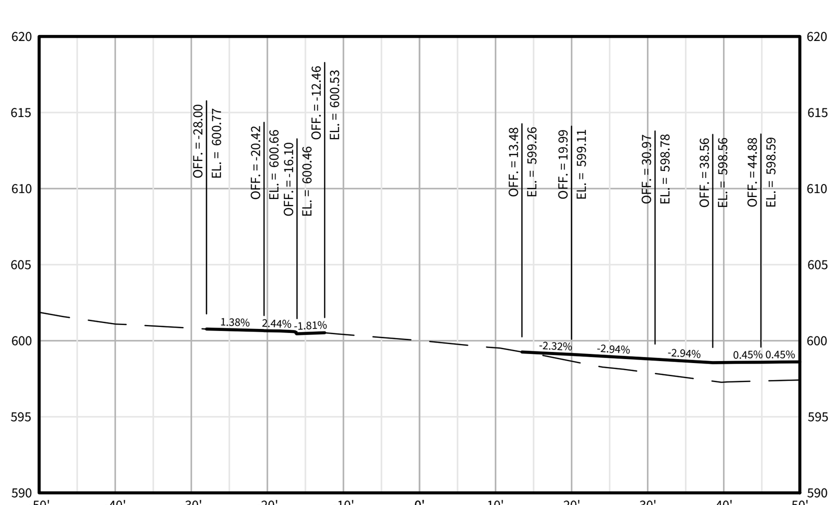
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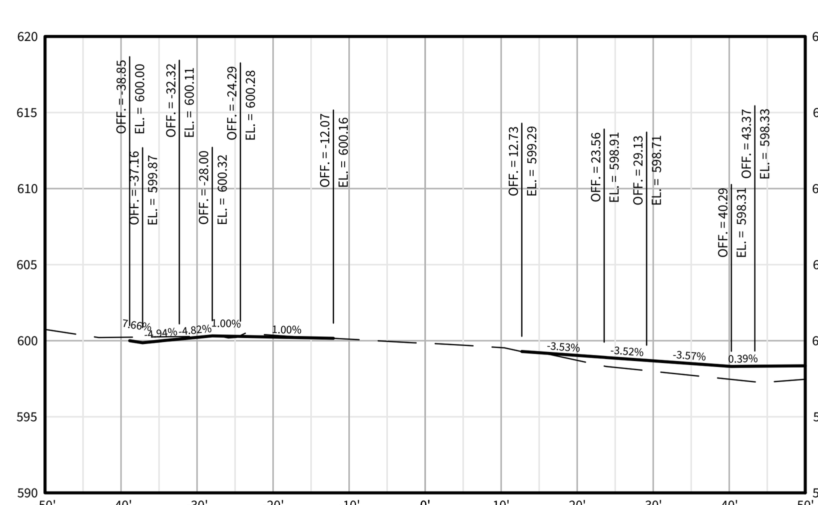
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PARK HOUSE UNIT 1

TXDOT TYPICAL SECTIONS - CROSS SECTIONS

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
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8.

STATE OF TEXAS
JOSE A. LOZANO
126773
LICENSED PROFESSIONAL ENGINEER
08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C8.S9

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VERTICAL SCALE: 1" = 10'

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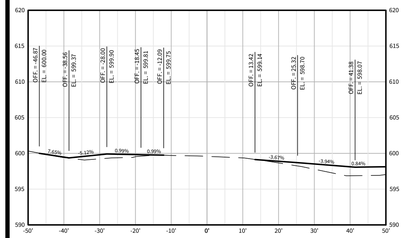

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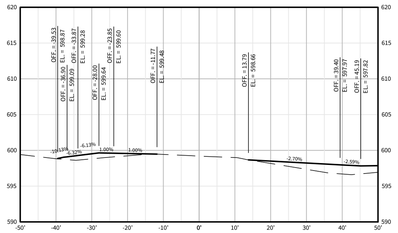

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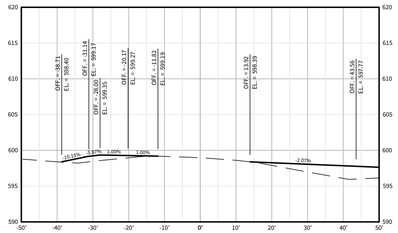

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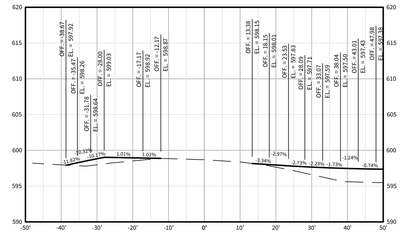

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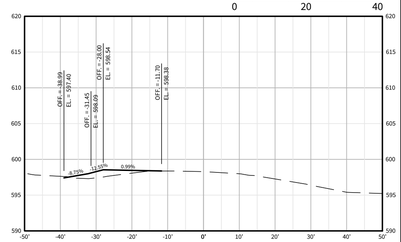

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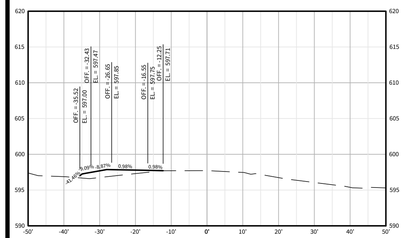

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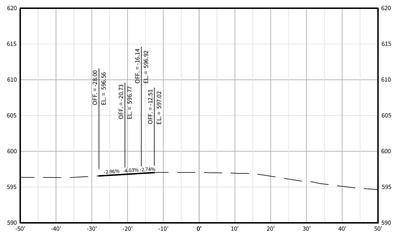

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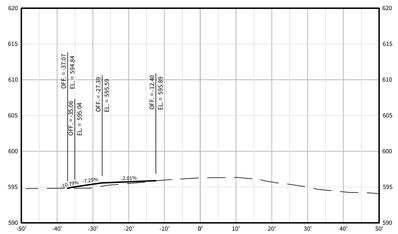

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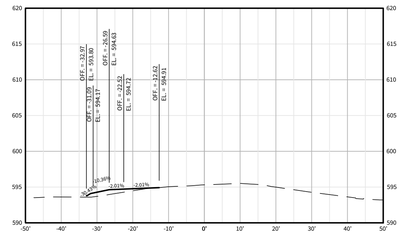

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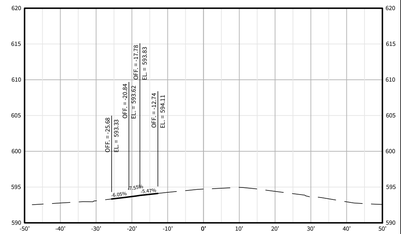

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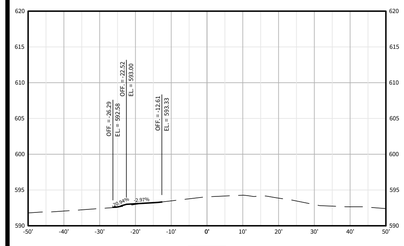

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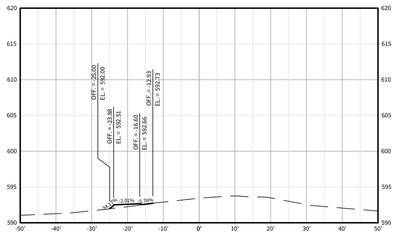

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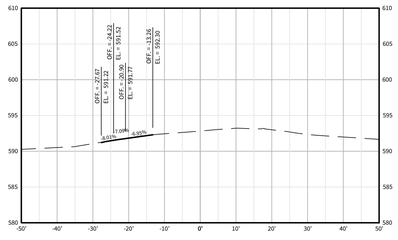

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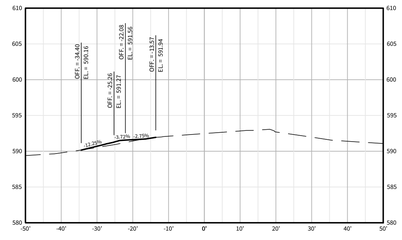

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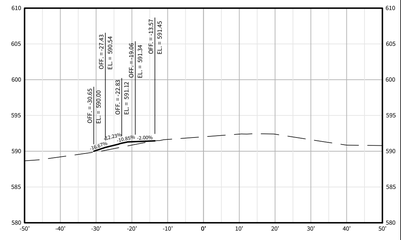

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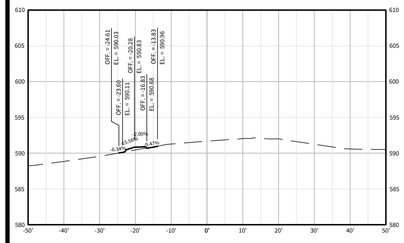

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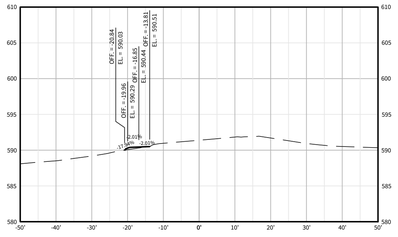

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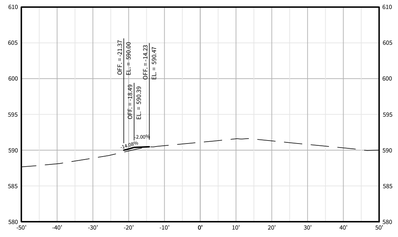

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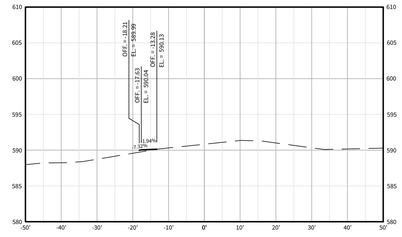

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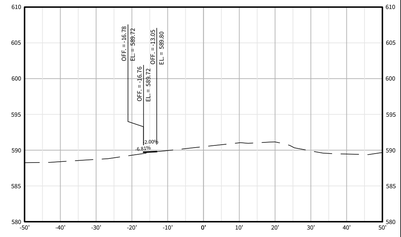

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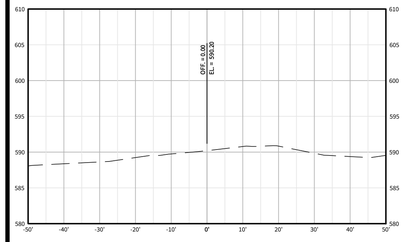

30+91

CUDEENGINEERS.COM

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San Marcos, Texas 78666
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PARK HOUSE
UNIT 1

TXDOT TYPICAL SECTIONS - CROSS SECTIONS

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
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STATE OF TEXAS
JOSE A. LOZANO
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08/29/25

CUDE ENGINEERS
TBPELS No. 10048500

C8.S10

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E:\04154\400\2-SWGP & Plans\CAD\X TXDOT TYPICAL SECTIONS - CROSS SECTIONS.dwg 2025/08/07 9:34am sgonzales

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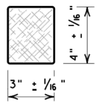
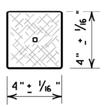
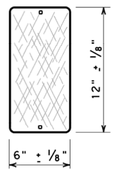
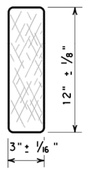
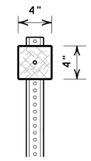
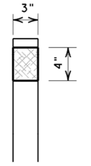
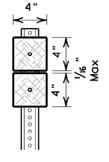
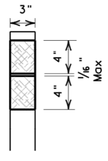
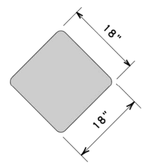
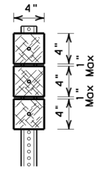
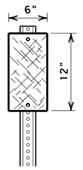
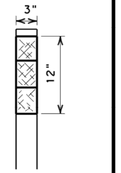
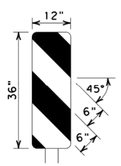
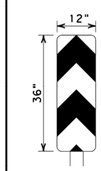
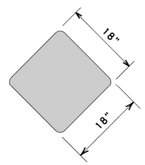
REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

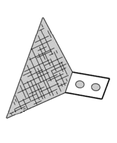
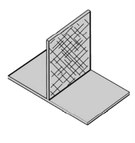
DELINEATORS

	SINGLE		DOUBLE	
DEVICE	 1-Size 2 reflector unit	 1-Size 1 reflector unit	 2-Size 2 reflector units	 2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	FLX	WC	FLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

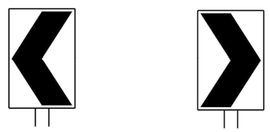
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE		 3-Size 2 reflector units	 1-Size 3 reflector unit	 3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	FLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

BARRIER REFLECTORS (BRF)

	GF1	GF2	CTB
DEVICE			
	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.		
SHEETING	Yellow, White, Red		
NOTE	1. Minimum 9 square inches of reflective sheeting surface area.		

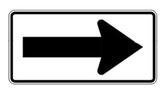
CHEVRONS

DEVICE:  W1-8

SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	

NOTE:
1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies).
2. The Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTIONAL LARGE ARROW (W1-6).

ONE DIRECTION LARGE ARROW

DEVICE:  W1-6

SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXX)XXX(XX)

NUMBER OF REFLECTORS
S = Single
D = Double

COLOR OF REFLECTORS
W = White
Y = Yellow
R = Red

REFLECTOR UNIT SIZE
1 or 2

TYPE OF POST OR DELINEATOR
WC = Wing Channel Post
FLX = Flexible Post
BRF = Barrier Reflector

TYPE OF MOUNT
GND = Embedded (drivable or set in concrete)
CTB = Concrete Barrier Mount
GF1 or GF2 = Guard Fence Attachment
SRF = Surface Mount

DIRECTION
If Required
BI = Bi-Directional
BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXX)XXX(XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s)(Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

TYPE OF POST
WC = Wing Channel Post
FLX = Flexible Post
TWT = Thin Walled Tubing

TYPE OF MOUNT
GND = Embedded (drivable)
SRF = Surface Mount
WAS = Wedge Anchor Steel
WAP = Wedge Anchor Plastic

DIRECTION
If Required
BI = Bi-Directional

DEPARTMENTAL MATERIAL SPECIFICATIONS

FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

NOTE:
Delineator and object marker backplates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation | Traffic Operations Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-15

FILE: dom1-15.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS				
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10				

20A

DATE:
FILE:

CUDEENGINEERS.COM
1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE
UNIT 1

TXDOT DELINEATION DETAILS

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1 2 3 4 5 6 7 8

CUDE ENGINEERS
TBPELS No. 10048500

C8.D1

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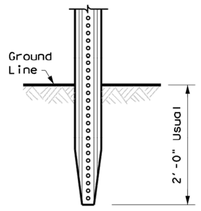
POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

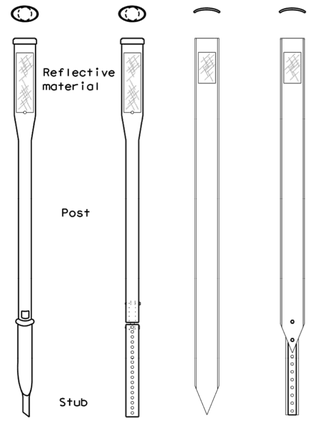


NOTES

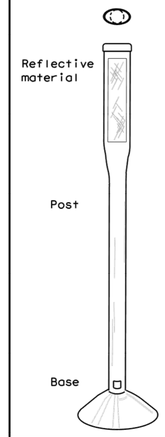
1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

FLEXIBLE POSTS (FLX)

GND



SRF



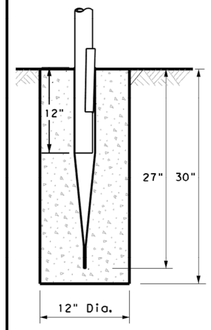
EMBEDDED | **SURFACE MOUNT**

NOTES

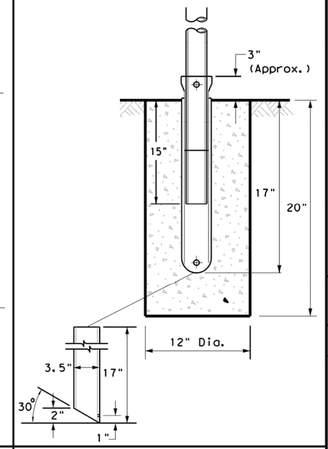
1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.

WEDGE ANCHOR SYSTEMS

WAS



WAP



STEEL | **PLASTIC**

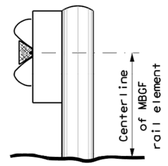
NOTE

1. Install per manufacturer's recommendations.

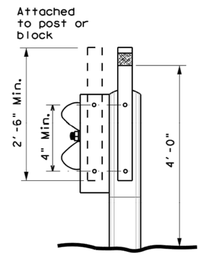
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

GF1

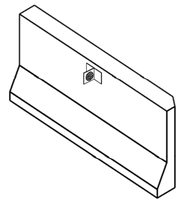


GF2



CONCRETE BARRIER / BRIDGE RAIL

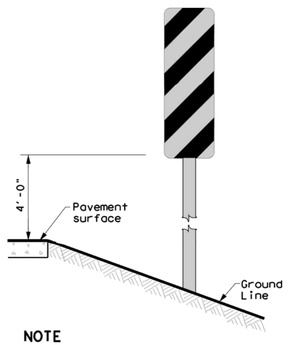
CTB



GENERAL NOTES

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.

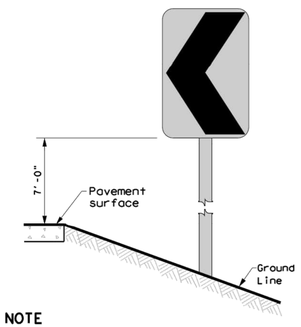
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

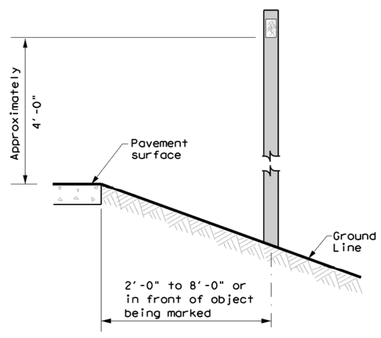
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTIONAL LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

Texas Department of Transportation — Traffic Operations Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-15

FILE: dom2-15.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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REVISIONS 10-09 3-15 4-10	DIST	COUNTY		SHEET NO.

20B

DATE:
FILE:

CUDEENGINEERS.COM

CUDE ENGINEERS

1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE
UNIT 1

TXDOT DELINEATION DETAILS

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

CUDE ENGINEERS
TBPELS No. 10048500

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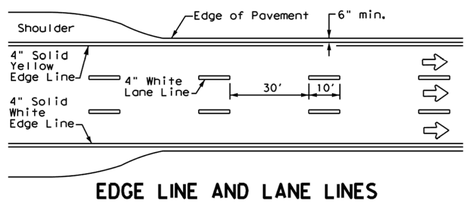
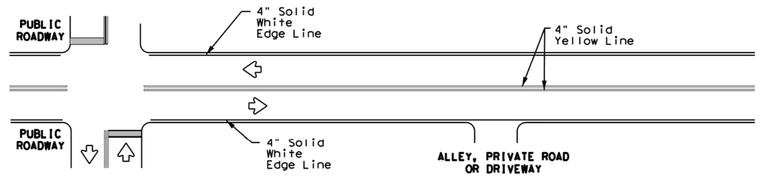
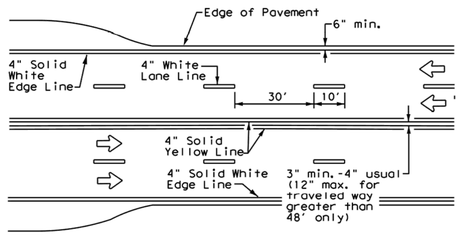


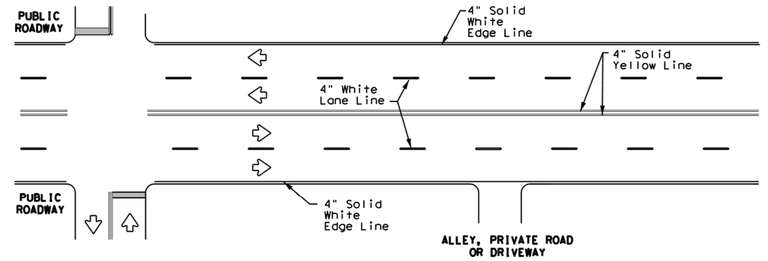
EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



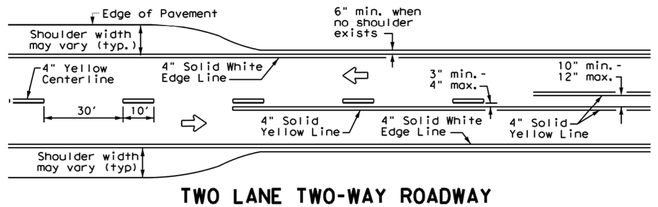
TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

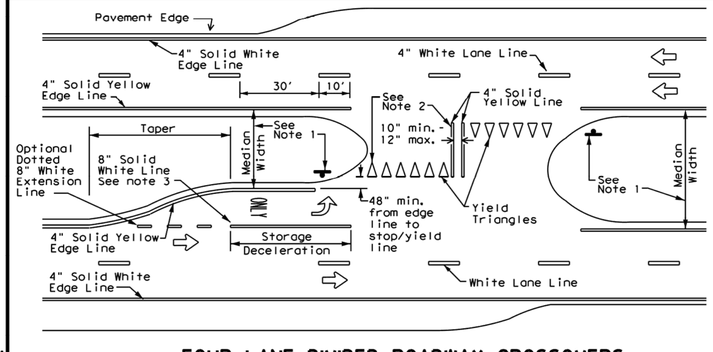


TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs are optional as determined by the Engineer.

2. Install median striping (double yellow centerlines and stop bars/yield triangles) when a 50' or greater median centerline can be placed. Stop bars shall only be used with stop signs. Yield traingles shall only be used with yield signs.

3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

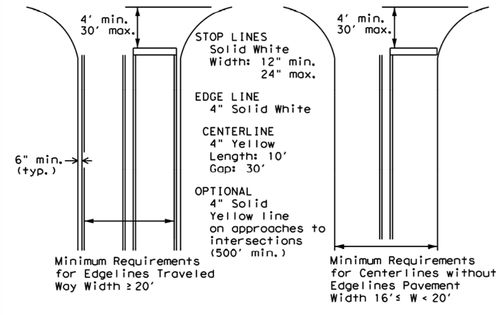
GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should not be placed less less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.

2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to the inside of edgeline of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-20

FILE: pm1-20.dgn	DN:	CK:	DW:	CK:
© TxDOT November 1978	CONT	SECT	JOB	HIGHWAY
8-95 3-03 REVISIONS				
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00 6-20				

22A

DATE:
FILE:

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CUDE ENGINEERS

1290 Wonder World Drive, Suite 1240
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PARK HOUSE UNIT 1

TXDOT PAVEMENT MARKING DETAILS

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

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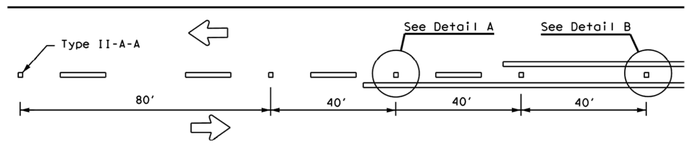
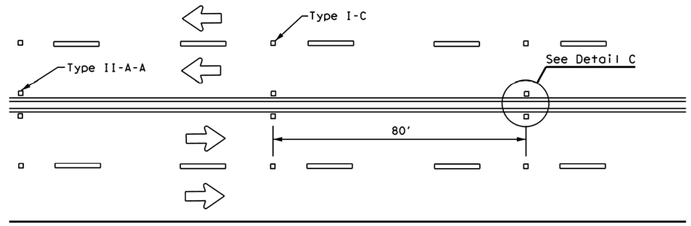
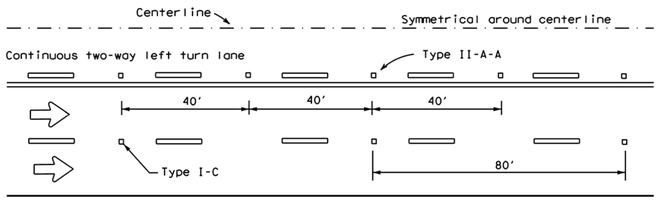
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



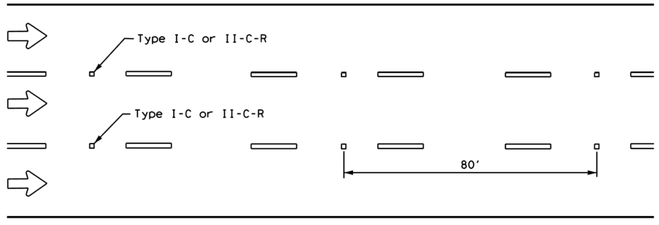
CENTERLINE FOR ALL TWO LANE ROADWAYS



CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS

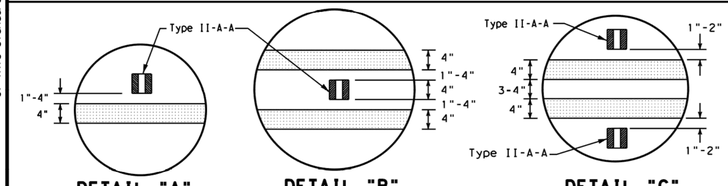


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE

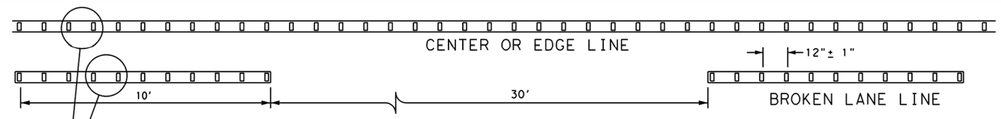


LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

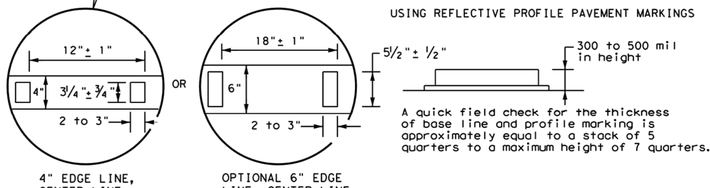


DETAIL "A" DETAIL "B" DETAIL "C"



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS



4" EDGE LINE, CENTER LINE OR LANE LINE

OPTIONAL 6" EDGE LINE, CENTER LINE OR LANE LINE

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

NOTE

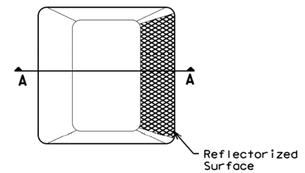
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

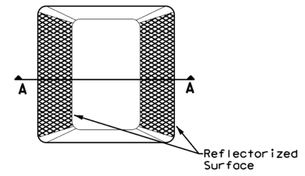
1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

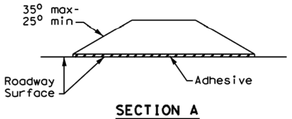
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation — Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-20

FILE: pm2-20.dgn	DN:	CK:	DW:	CK:
©TxDOT April 1977	CONT	SECT	JOB	HIGHWAY
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TXDOT PAVEMENT MARKING DETAILS

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS 1 2 3 4 5 6 7 8

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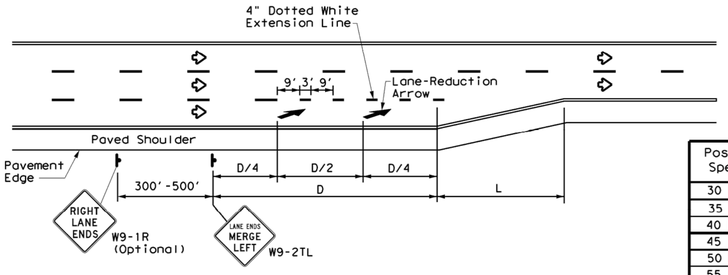
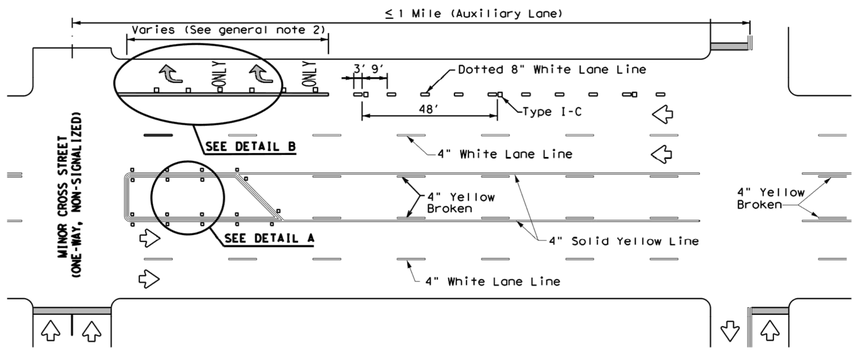
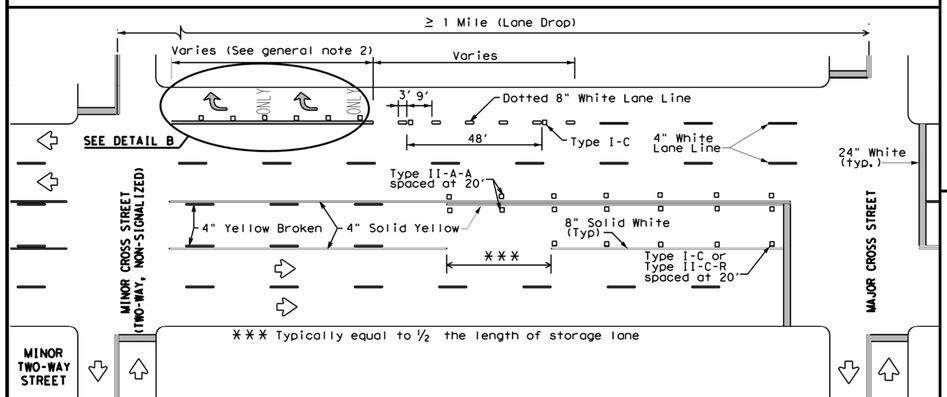


LANE REDUCTION

Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	



TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE

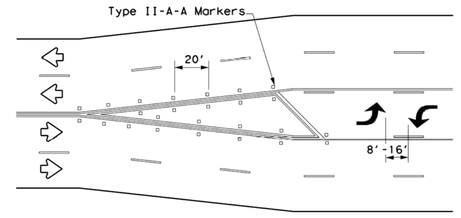


TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP

DATE:
FILE:

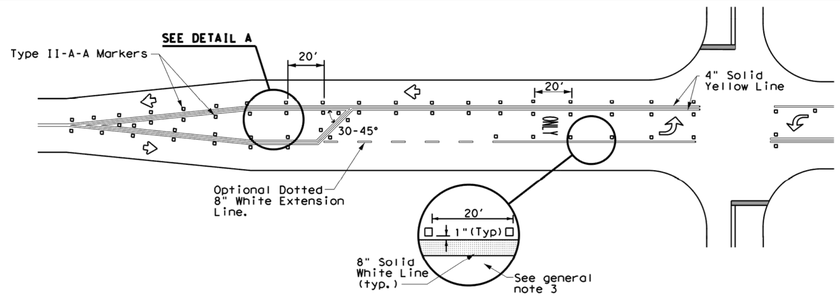
NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional W9-1R "RIGHT LANE ENDS" sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.



A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY



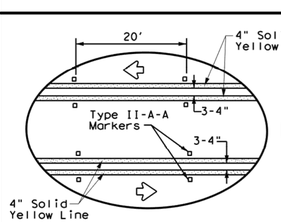
TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS

GENERAL NOTES

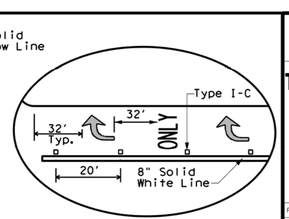
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



DETAIL A



DETAIL B

Texas Department of Transportation — Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS
PM(3)-20

FILE: pm3-20.dgn	DN:	CK:	DW:	CK:
©TxDOT April 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS				
5-00 2-10	DIST	COUNTY		SHEET NO.
8-00 2-12				
3-03 6-20				

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PARK HOUSE
UNIT 1

TXDOT PAVEMENT MARKING DETAILS

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PROJECT NO.
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CHECKED BY
JL/AC

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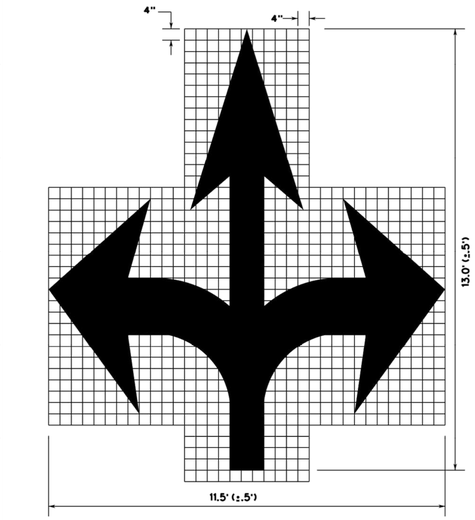
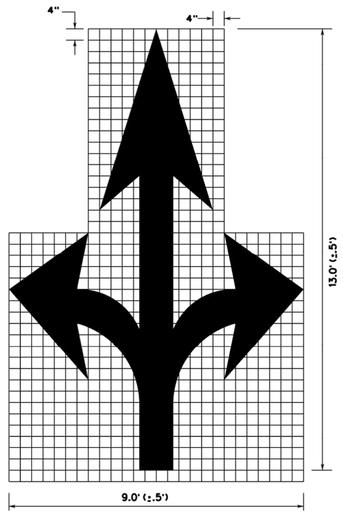
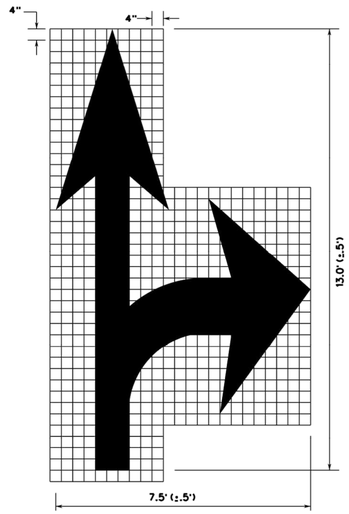
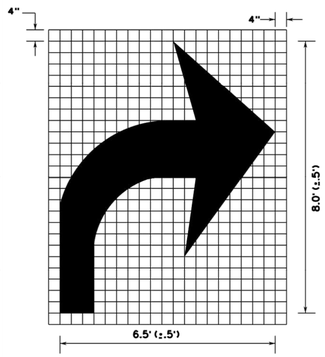
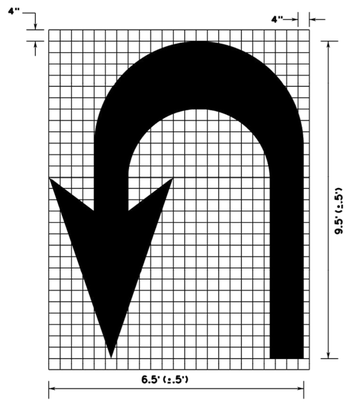
R:\04154-000\2-ENGR\4-Plans\C8.D5 TXDOT DASH MOUNTING DETAILS SMALL ROADSIDE SIGNS.dwg 2025/08/07 2:15pm sgarrett

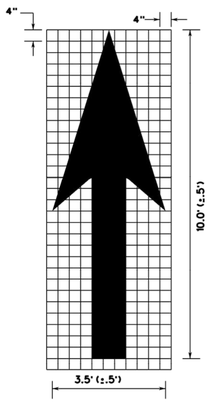


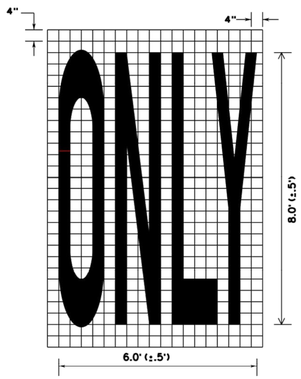












NOTES:

1. MINIMUM 8 FOOT WHITE MARKINGS SHALL BE USED, UNLESS OTHERWISE NOTED. IF MESSAGE CONSISTS OF MORE THAN ONE WORD, IT SHOULD BE PLACED WITH FIRST WORD NEAREST THE DRIVER.

2. THESE DETAILS ARE STANDARD SIZE FOR NORMAL INSTALLATION; SIZES MAY BE REDUCED APPROXIMATELY ONE-THIRD DEPENDING ON CONDITIONS.

3. THE LONGITUDINAL SPACE BETWEEN MARKINGS SHOULD BE 30 FEET.

4. MARKINGS CONSIDERED APPROPRIATE FOR USE WHEN WARRANTED INCLUDE THE FOLLOWING:

   A. REGULATORY
      STOP
      RIGHT (LEFT) TURN ONLY
      25 MPH
      SYMBOL ARROWS
   B. WARNING
      STOP AHEAD
      SIGNAL AHEAD
      SCHOOL
      SCHOOL X-ING
      PED X-ING
      R X R (SEE RCPM DETAIL)
      OTHER WORDS OR SYMBOLS MAY BE NECESSARY UNDER CERTAIN CONDITIONS

5. UNCONTROLLED USE OF PAVEMENT MARKINGS CAN RESULT IN DRIVER CONFUSION. WORD AND SYMBOL MARKINGS SHOULD BE NO MORE THAN THREE LINES.

6. THE WORD "STOP" SHALL NOT BE USED ON THE PAVEMENT UNLESS ACCOMPANIED BY A STOP LINE AND STOP SIGN. THE WORD "STOP" SHALL NOT BE PLACED ON THE PAVEMENT IN ADVANCE TO A STOP LINE, UNLESS EVERY VEHICLE IS REQUIRED TO STOP AT ALL TIMES.

7. PAVEMENT MARKINGS SHOULD GENERALLY BE NO MORE THAN ONE LANE IN WIDTH, WITH SCHOOL MESSAGES BEING THE EXCEPTION. FOR DETAILS OF SCHOOL AND SCHOOL CROSSING PAVEMENT MARKINGS, REFER TO PART VII OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

8. SPACING BETWEEN LETTERS SHOULD BE APPROXIMATELY 4 INCHES. THE WIDTH OF LETTERS MAY VARY DEPENDING ON THE WIDTH OF THE TRAVEL LANES.

9. LANE-USE ARROW MARKINGS MAY BE USED TO CONVEY EITHER GUIDANCE OR MANDATORY MESSAGES. ARROWS USED TO CONVEY A MANDATORY MOVEMENT MUST BE ACCOMPANIED BY STANDARD SIGNS AND THE PAVEMENT MARKING WORD "ONLY".

10. PAVEMENT MARKINGS ARE TO BE LOCATED AS SPECIFIED ELSEWHERE IN THE PLANS.

SEPTEMBER 2009

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

TRAFFIC ENGINEERING STANDARDS

STANDARD PAVEMENT MARKINGS (ARROWS)

SHEET 3 OF 16

% SUBMITTAL	PROJECT NO.:		DATE:
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PARK HOUSE UNIT 1

TXDOT PAVEMENT MARKING DETAILS

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08/07/2025

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C:\04154-000\3-SWMP & Plans\CAD\TXDOT SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS.dwg 2025/08/07 2:14pm sgonzales

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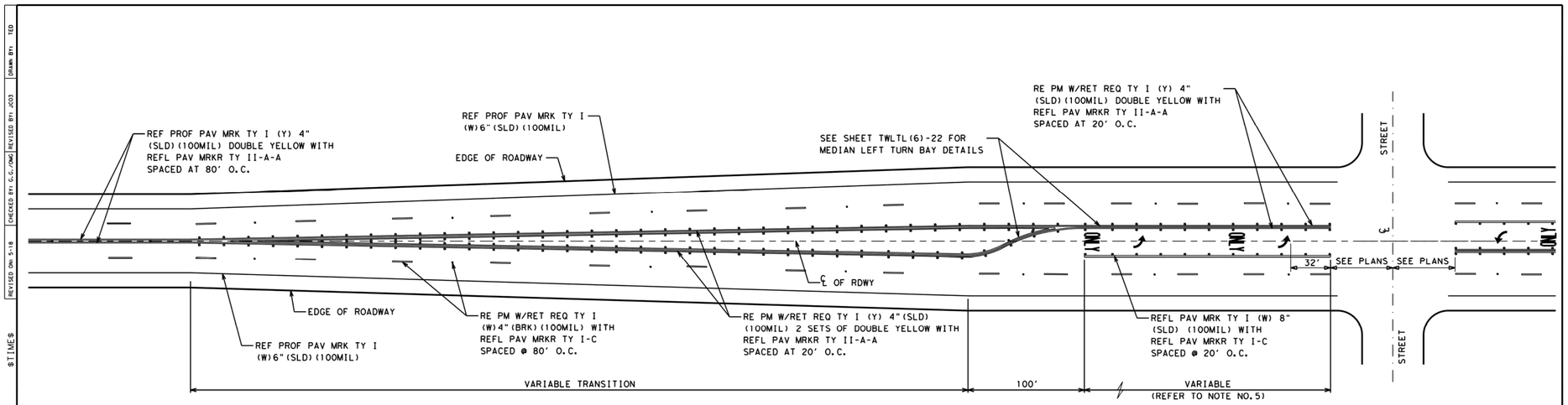
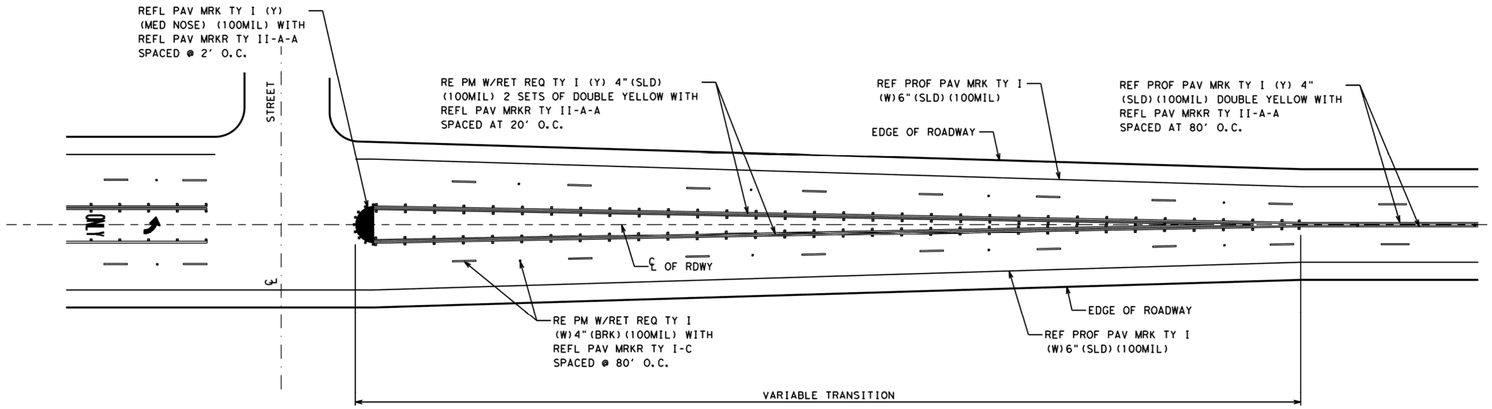


TYPICAL MEDIAN LEFT TURN BAY (FOR USE ON RURAL ROADS)

SIGNALIZED AND NON-SIGNALIZED CROSS STREETS
WITH LEFT TURN BAY

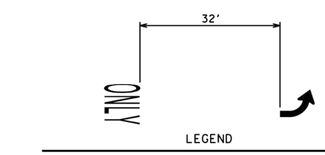


TYPICAL TRANSITION

LEFT TURN BAY END CONDITION AND ROADWAY TRANSITION

NOTES:

1. PAVEMENT MARKERS SHOULD BE IN ACCORDANCE WITH STATE STANDARDS PM(2)-20 (POSITIONING GUIDANCE).
2. PAVEMENT MARKING ARROWS SHALL COMPLY TO TEXAS MUTCD
3. LEFT TURN BAY LAYOUT, TWO SETS OF "WORDS" AND "ARROWS" SHALL BE USED IF THE LENGTH OF THE BAY IS EQUAL TO OR GREATER THAN 180 FEET. THE BOTTOM OF THE FIRST "ONLY" SHALL BE PLACED AT THE BEGINNING OF THE TURN BAY LANE LINE AS SHOWN ABOVE.
4. REFER TO TXDOT STANDARD PM(3)-20 FOR MORE TURN LANE DETAILS.
5. REFER TO TXDOT ROADWAY DESIGN MANUAL FOR DECELERATION AND STORAGE LENGTH.



LEGEND

TYPICAL DETAIL
(PLACE LEGENDS IN ACCORDANCE TO STATE STANDARD PM(3)-20)

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TWO WAY LEFT TURN LANE AND LEFT TURN BAYS - RURAL ROADS

SCALE: NS — **TWLTL(1)-22**

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MAY 2010 MAY 2018 MAY 2022	STATE	DIST.	COUNTY	
	CONT.	SECT.	JOB	HIGHWAY NO.

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PARK HOUSE UNIT 1

TXDOT PAVEMENT MARKING DETAILS

DATE
08/07/2025

PROJECT NO.
04154-000

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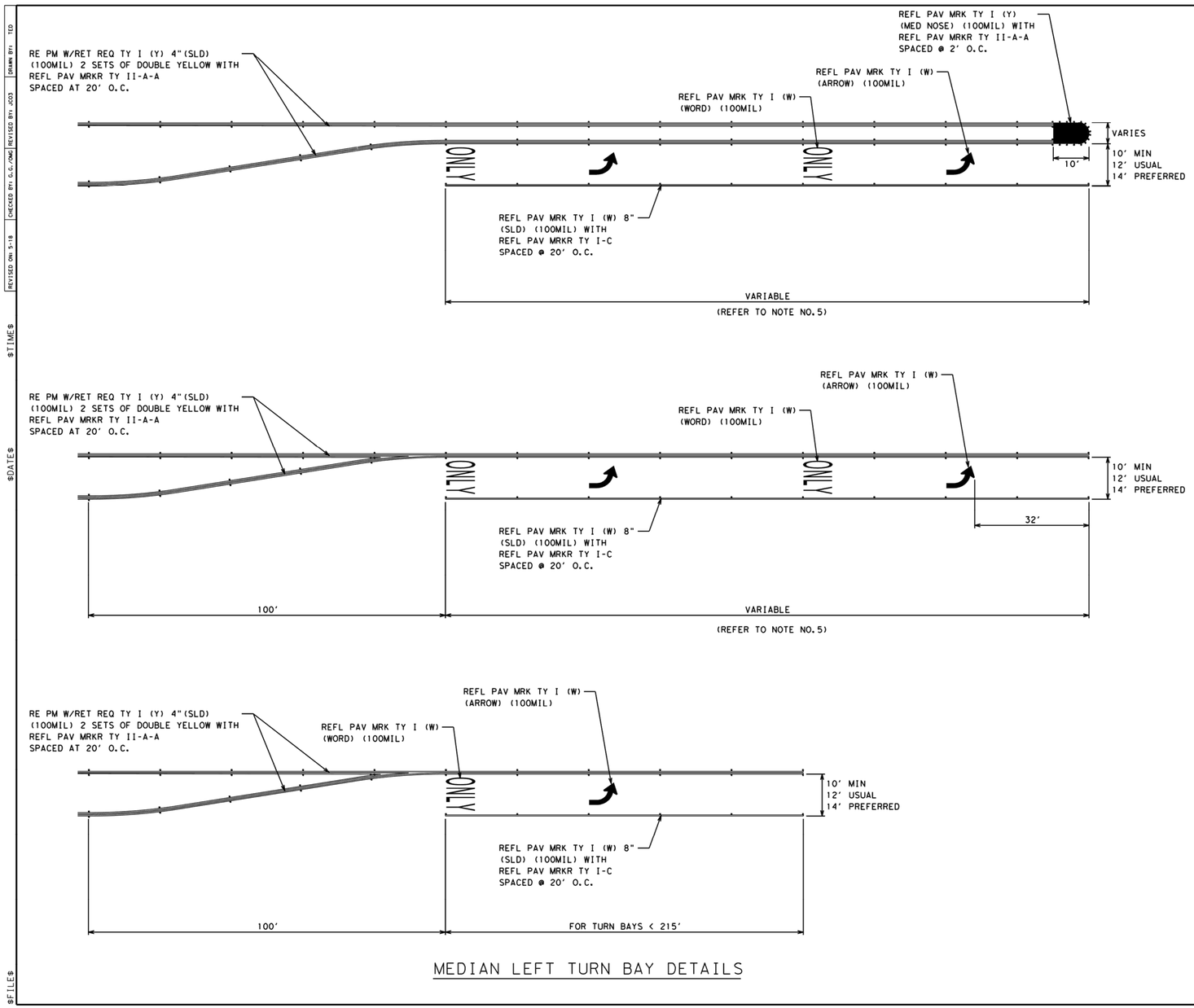

MEDIAN LEFT TURN BAY DETAILS

NOTES:

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2. PAVEMENT MARKING ARROWS SHALL COMPLY TO TEXAS MUTCD
3. LEFT TURN BAY LAYOUT, TWO SETS OF "WORDS" AND "ARROWS" SHALL BE USED IF THE LENGTH OF THE BAY IS EQUAL TO OR GREATER THAN 180 FEET. THE BOTTOM OF THE FIRST "ONLY" SHALL BE PLACED AT THE BEGINNING OF THE TURN BAY LANE LINE AS SHOWN ABOVE.
4. REFER TO TXDOT STANDARD PM(3)-20 FOR MORE TURN LANE DETAILS.
5. REFER TO TXDOT ROADWAY DESIGN MANUAL FOR DECELERATION AND STORAGE LENGTH.

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TWO WAY LEFT TURN LANE AND LEFT TURN BAYS - URBAN ROADS

SCALE: NS — **TWLTL(6)-22**

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	CONT.	SECT.	JOB	HIGHWAY NO.

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© 04154-001\3-SHWG # Sheets\C8.D7 TXDOT SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS.dwg 8/25/2025 2:16pm sgroves

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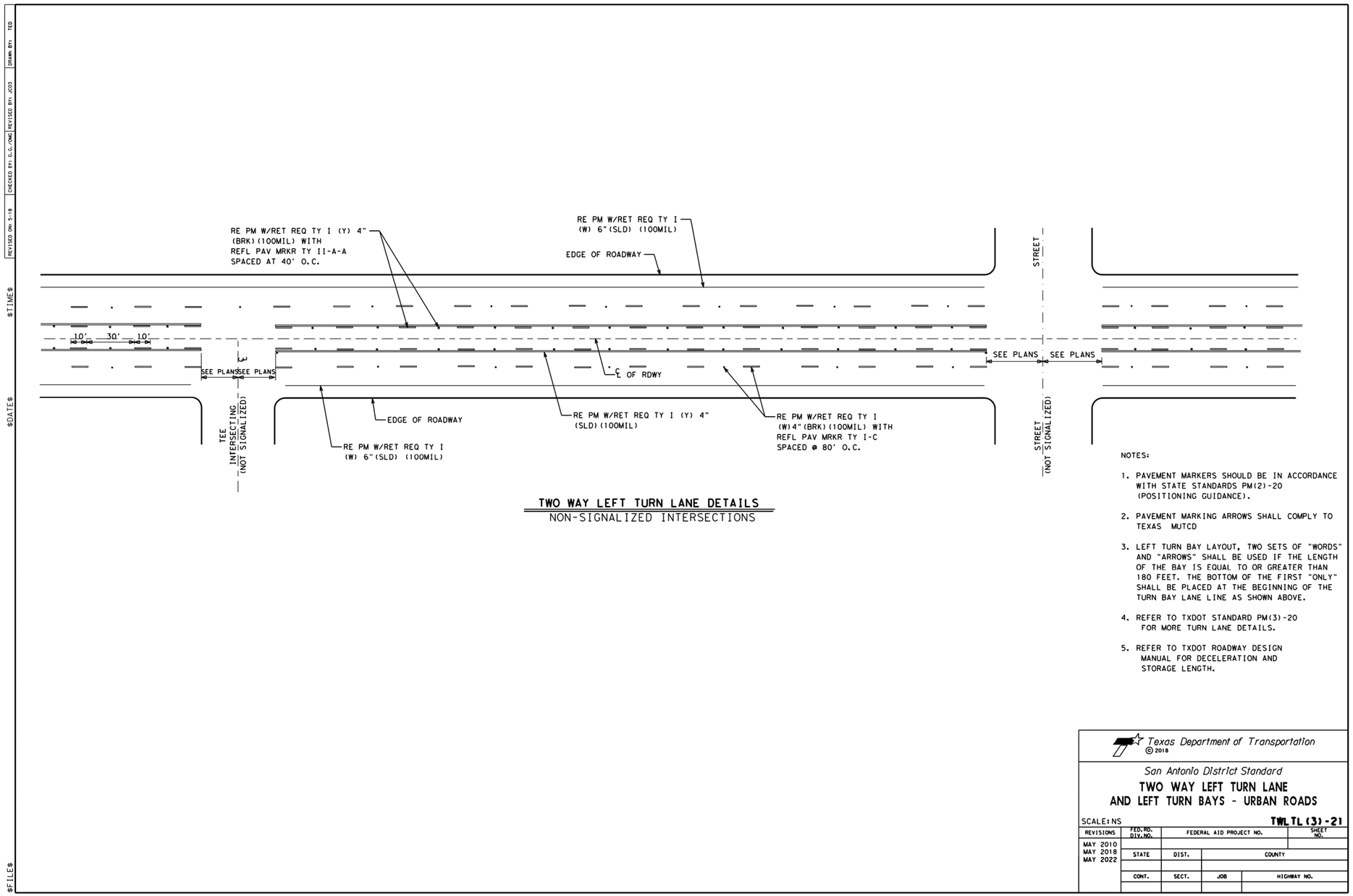

TWO WAY LEFT TURN LANE DETAILS
NON-SIGNALIZED INTERSECTIONS

NOTES:

1. PAVEMENT MARKERS SHOULD BE IN ACCORDANCE WITH STATE STANDARDS PM(2)-20 (POSITIONING GUIDANCE).
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TWO WAY LEFT TURN LANE AND LEFT TURN BAYS - URBAN ROADS

SCALE: NS — **TWLTL(3)-21**

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04154-000 | C:\04154-000 | 2 Plans | 2.3 TXDOT SIGN MOUNTING DETAILS SHEETS | Aug 2025 | 8:07:2 2:16pm | sgonzales

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

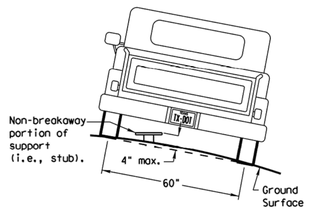
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

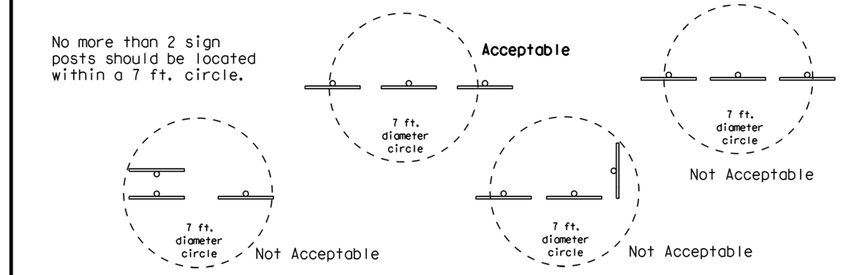
Sign Mounting Designation

P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BW = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT

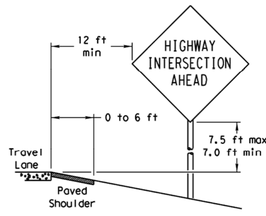


To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).



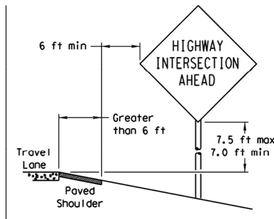
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

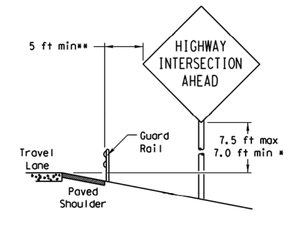
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



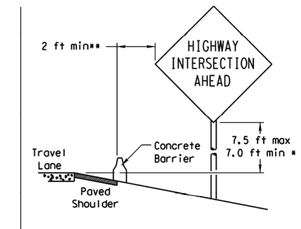
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

BEHIND BARRIER



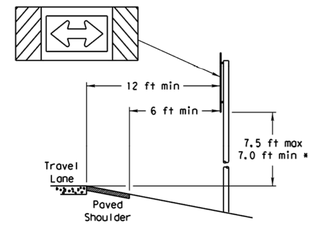
BEHIND GUARDRAIL



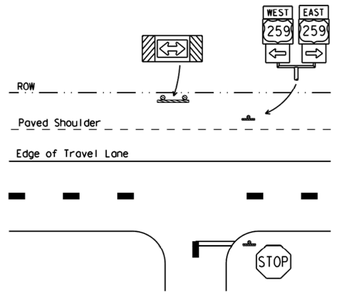
BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

T-INTERSECTION



When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

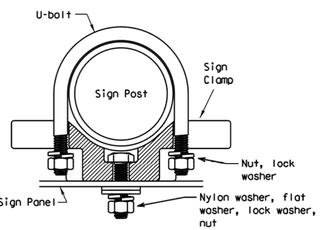
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

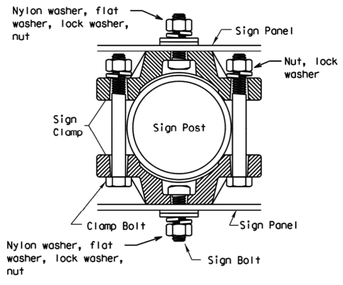
The website address is:
http://www.txdot.gov/publications/traffic.htm

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs



Back-to-Back Signs



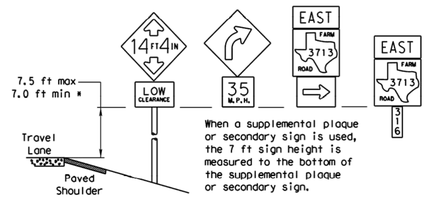
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

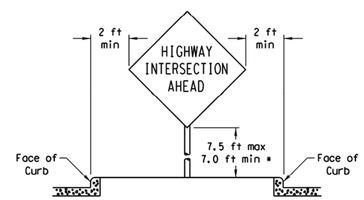
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



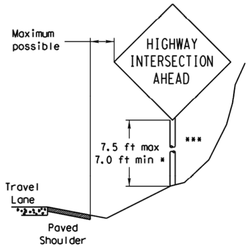
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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TXDOT SIGN MOUNTING DETAILS

DATE
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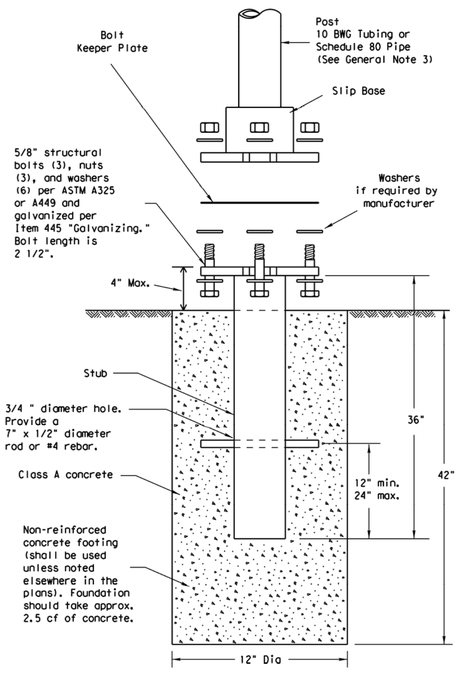
TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

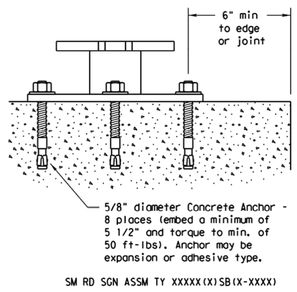
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent
   - outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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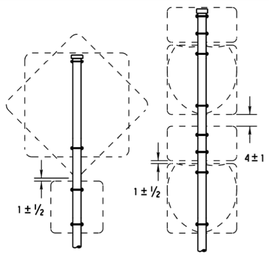
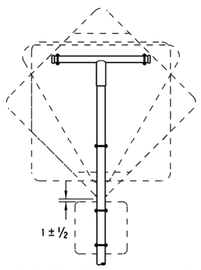


SM RD SGN ASSM TY XXXXX(1)XX(P)



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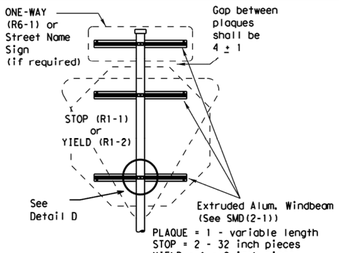
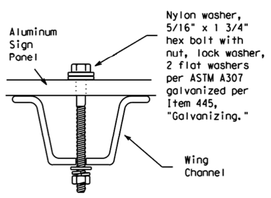
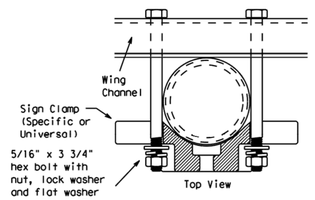


SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



Detail A

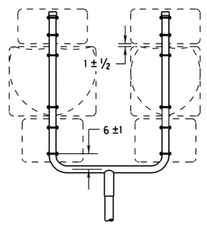


Detail B

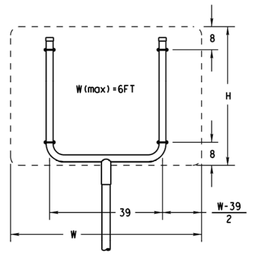
GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

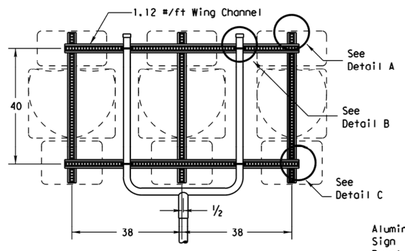
1. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
6. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
9. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
10. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
11. Post open ends shall be fitted with Friction Caps.
12. Sign blanks shall be the sizes and shapes shown on the plans.



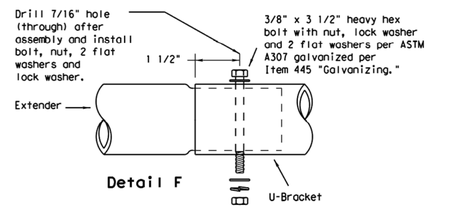
SM RD SGN ASSM TY XXXXX(1)XX(U)



SM RD SGN ASSM TY XXXXX(1)XX(U)

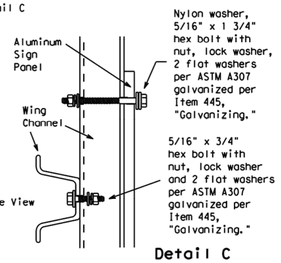


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

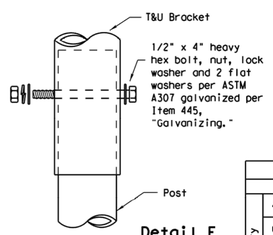


Detail F

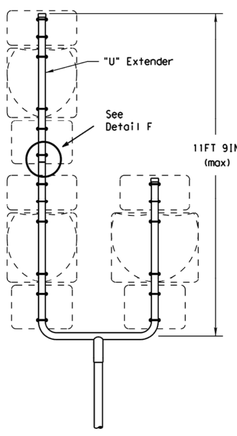
Splices shall only be allowed behind the sign substrate.



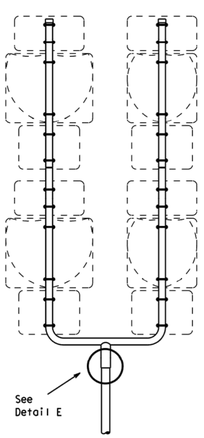
Detail C



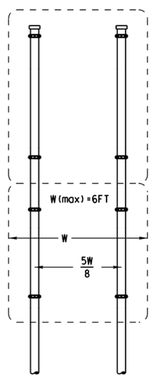
Detail E



SM RD SGN ASSM TY S80(1)XX(U-1EXT)

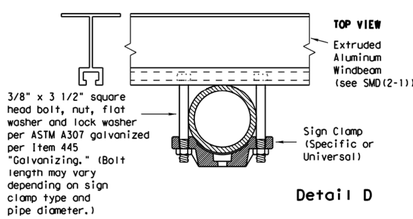


SM RD SGN ASSM TY S80(1)XX(U-2EXT)

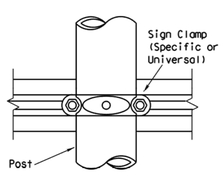


SM RD SGN ASSYM TY XXXXX(2)XX(P)

SIDE VIEW

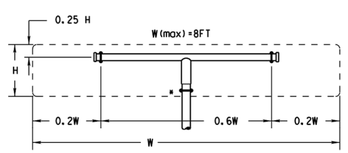


Detail D



REQUIRED SUPPORT

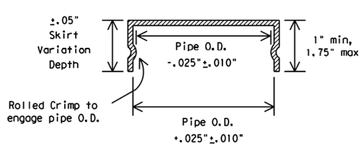
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)



All dimensions are in english unless detailed otherwise.

SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

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DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
DIST	COUNTY		SHEET NO.

9-08 REVISIONS

26C

DATE:
FILE:

CUDEENGINEERS.COM
CUDE ENGINEERS
1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE
UNIT 1

TXDOT SIGN MOUNTING DETAILS

DATE
08/07/2025
PROJECT NO.
04154-000
DRAWN BY
SG/JVA
CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

CUDE ENGINEERS
TBPELS No. 10048500

C8.D11

© 04154-000 J:\DWG\Park Forest\C8\D11 TXDOT SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS.dwg 2025/08/07 2:16pm sgroves

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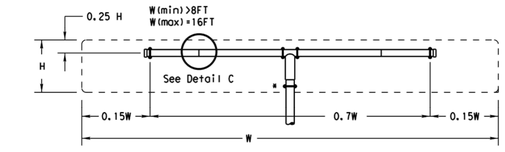
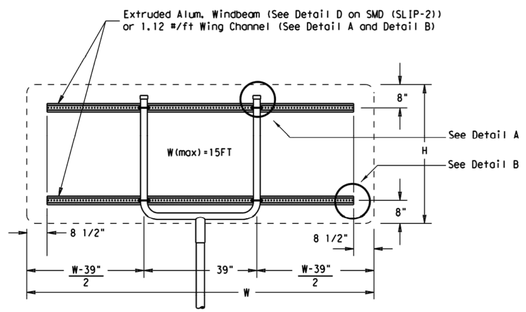
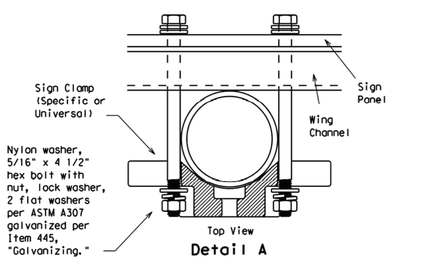


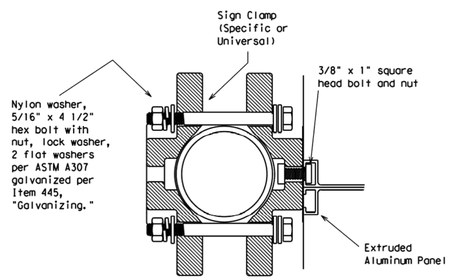
SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



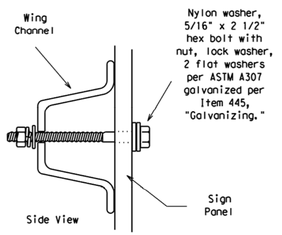
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



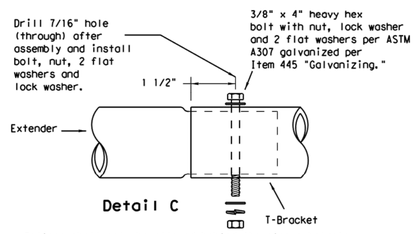
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

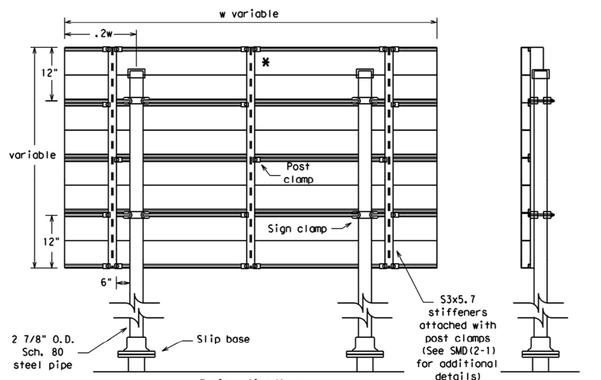


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

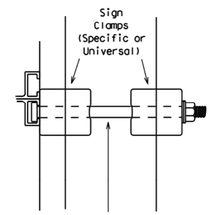


Typical Sign Mount

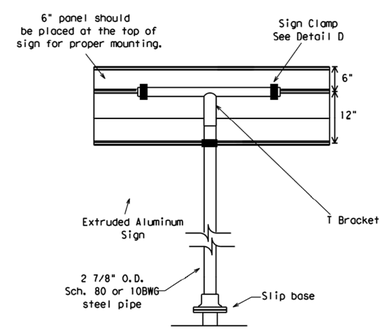
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

✱ Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

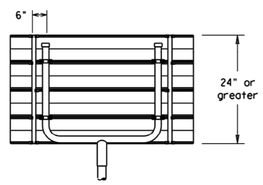
See Detail E
for clamp installation



Detail E



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

GENERAL NOTES:

1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.

	REQUIRED SUPPORT	
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY

DIST	COUNTY	SHEET NO.

REVISIONS
9-08

26D

DATE:
FILE:

CUDEENGINEERS.COM
CUDE ENGINEERS
1290 Wonder World Drive, Suite 1240
San Marcos, Texas 78666
P:(210) 681.2951 F: (210) 523.7112

PARK HOUSE
UNIT 1

TXDOT SIGN MOUNTING DETAILS

DATE
08/07/2025
PROJECT NO.
04154-000
DRAWN BY
SG/JVA
CHECKED BY
JL/AC

REVISIONS
1. 2. 3. 4. 5. 6. 7. 8.

CUDE ENGINEERS
TBPELS No. 10048500

C8.D12

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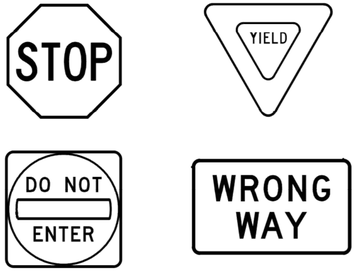
DATE:
FILE:

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS
(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

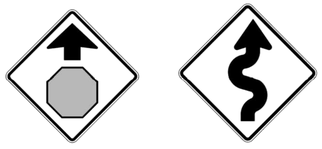
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation | Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 12-03 7-13 9-08	DIST	COUNTY		SHEET NO.

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PARK HOUSE UNIT 1

TXDOT SIGN MOUNTING DETAILS

DATE
08/07/2025

PROJECT NO.
04154-000

DRAWN BY
SG/JVA

CHECKED BY
JL/AC

REVISIONS
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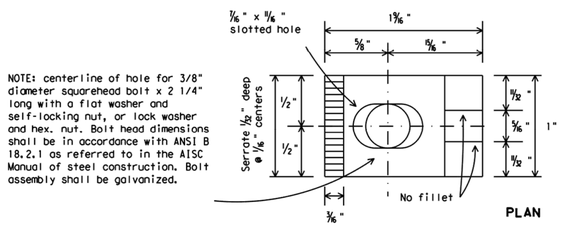
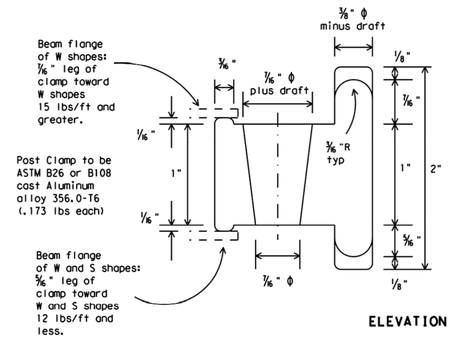
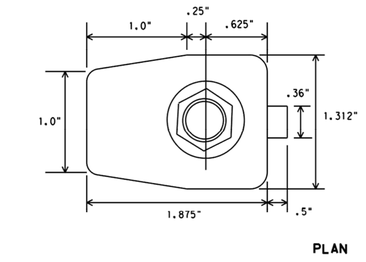
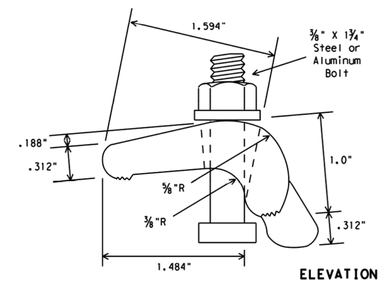


NOTE: centerline of hole for 3/8" diameter squarehead bolt x 2 1/4" long with a flat washer and self-locking nut, or lock washer and hex. nut. Bolt head dimensions shall be in accordance with ANSI B 18.2.1 as referred to in the AISC Manual of steel construction. Bolt assembly shall be galvanized.

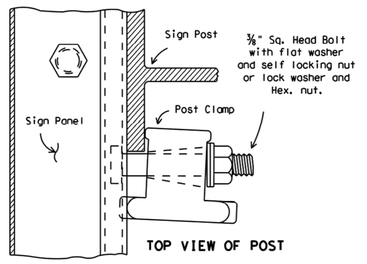


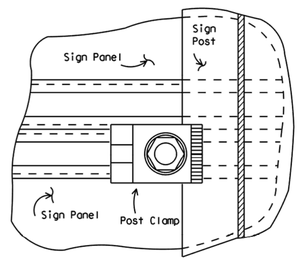
POST CLAMP DETAIL

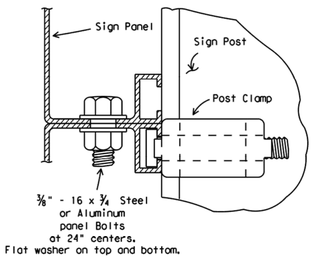




ALTERNATE POST CLAMP DETAIL







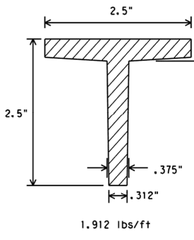
CONNECTION DETAILS

DEPARTMENTAL MATERIAL SPECIFICATIONS

SIGN HARDWARE	DMS-7120

GENERAL NOTES:

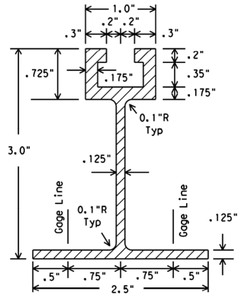
1. Design conforms with AASHTO Specifications for the design and construction of structural supports for highway signs.
2. Materials and fabrication shall conform to the requirements of the Department material specifications.
3. Structural steel shall be "low-alloy steel" for non-bridge structures per Item 442, "Metal For Structures."
4. For fiberglass substrate connection details, see manufacturer's recommendations.

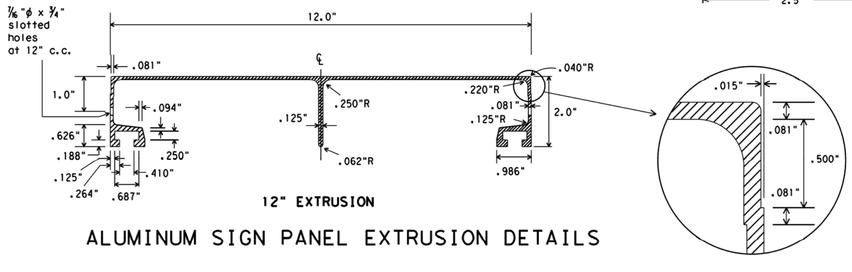


ALUMINUM T SECTION OR APPROVED ALTERNATIVE

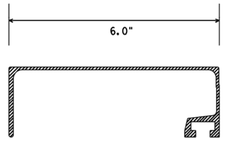
WINDBEAM CROSS SECTION

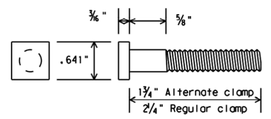
Windbeam to be extruded aluminum (1.175 lbs/ft) or approved alternative





ALUMINUM SIGN PANEL EXTRUSION DETAILS





POST CLAMP BOLT DETAIL

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS-
EXTRUDED ALUMINUM
SIGN PANELS & HARDWARE

SMD(2-1)-08

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9-08 REVISIONS

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PARK HOUSE
UNIT 1

TXDOT SIGN MOUNTING DETAILS

DATE
08/07/2025
PROJECT NO.
04154-000
DRAWN BY
SG/JVA
CHECKED BY
JL/AC

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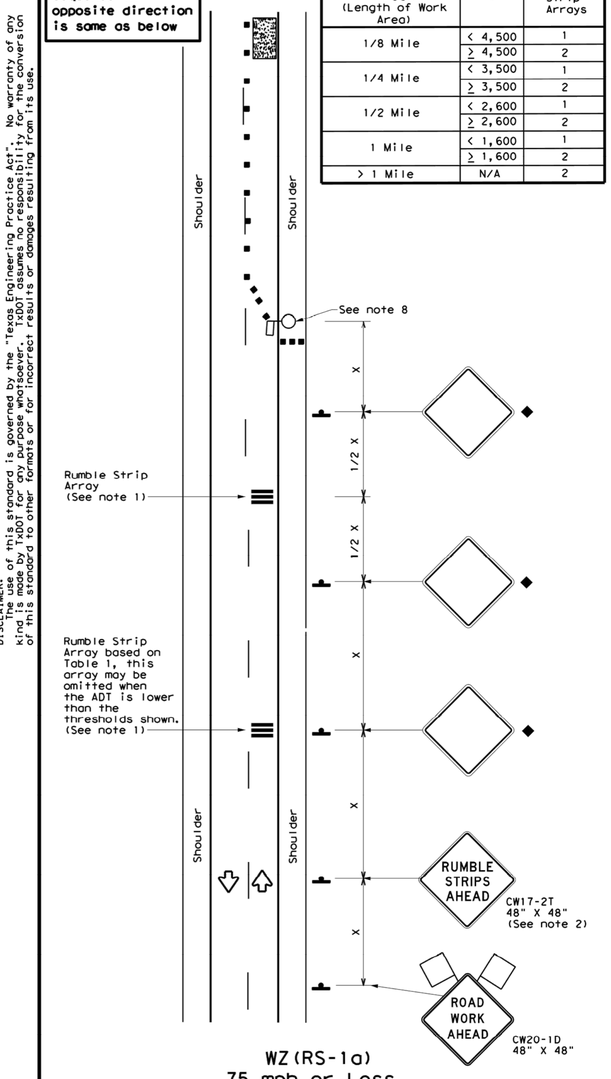
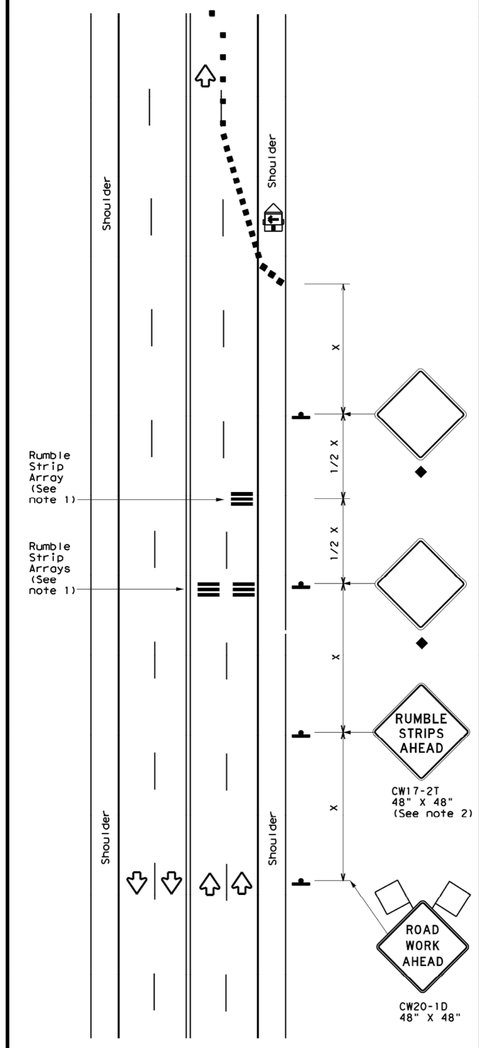
Warning sign and rumble strip sequence in opposite direction is same as below

TABLE 1		
Flagger to Flagger (Length of Work Area)	ADT	# of Rumble Strip Arrays
1/8 Mile	< 4,500	1
	≥ 4,500	2
1/4 Mile	< 3,500	1
	≥ 3,500	2
1/2 Mile	< 2,600	1
	≥ 2,600	2
1 Mile	< 1,600	1
	≥ 1,600	2
> 1 Mile	N/A	2



WZ(RS-1a)
75 mph or Less

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



WZ(RS-1b)
75 mph or Less

RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

1. Each Rumble Strip Array should consist of three rumble strips spaced center to center at the spacing shown in Table 2, placed transverse across the lane at locations shown.
2. The CW17-2T "RUMBLE STRIPS AHEAD" sign should be located after the CW20-1D "ROAD WORK AHEAD sign and spaced as shown. If traffic is observed to be queuing, or is expected to queue beyond the Rumble Strips, the CW17-2T sign and the first Rumble Strip Array may be located upstream of the CW20-1D sign as necessary to provide needed warning.
3. Temporary Rumble Strips will be considered subsidiary to Item 502, and shall be a product listed on the Compliant Work Zone Traffic Control Devices.
4. Removal of the Temporary Rumble Strips should be accomplished before removing the advance warning signs.
5. Temporary Rumble Strips should not be used on horizontal curves, loose gravel, soft or bleeding asphalt, heavily rutted pavements or unpaved surfaces.
6. Temporary Rumble Strips shall be installed and maintained as per manufacturer's recommendations.
7. This standard sheet shall be used in conjunction with other appropriate TCP standard, TMUTCD typical application or project specific detail for the project.
8. The one-lane two-way application may utilize a flagger, an AFAD or a portable traffic signal.
9. Temporary Rumble Strips may be used on freeways or expressways based on engineering judgment.

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Panel	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "x" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT)
S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

◆ **Signs are for illustrative purposes only. Signs required may vary depending on the TCP, TMUTCD Typical Application, or project specific details for the project.**

TABLE 2	
Speed	Approximate distance between strips in an Array
≤ 40 MPH	10'
> 40 MPH & ≤ 55 MPH	15'
> 55 MPH	20'

Texas Department of Transportation — Traffic Operations Division Standard

TEMPORARY RUMBLE STRIPS

WZ(RS)-16

FILE: wzrs16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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PARK HOUSE UNIT 1

TXDOT RUMBLE STRIP DETAILS

DATE
08/07/2025

PROJECT NO.
04154-000

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C8.D15

C:\04154\DWG\2-PWD\4-Files\CAD\1-TXDOT SIGN MOUNTING DETAILS\SMALL ROADSIDE SIGNS.dwg 2025/08/07 2:13pm sgonzales
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